

The STAK Knee Rehabilitation Tool



After MUA Barrington only had 45°, he achieved 95° (50° increase) in 8 weeks using the STAK.

The Problem

Stiffness is the primary cause of dis-satisfaction with 20% of patients being severely dis-satisfied following total knee replacement (TKR) (Ebert *et al.*, 2017). Arthrofibrosis - stiffness and pain can occur following trauma or knee surgery this is the result of an exaggerated inflammatory response causing scar tissue to be deposited in the knee joint. Scar tissue continues to build resulting in severe stiffness, pain and loss of ROM leading to poor satisfaction and quality of life.

Cost implications

Standard knee replacement rehabilitation in the US costs approximately \$1500 per patient (Graver *et al.*, 2010). Arthrofibrosis accounts for 28% or hospital readmissions within 90 days of discharge (Cheuy *et al.*, 2017). Patients who have undergone manipulation under anaesthetic (MUA) have approximately twice the rate of revision surgery measured at 7 -10 years post primary TKR (Werner *et al.*, 2015; SKAR *et al.*, 2018). Stiffness is the primary reason for revision surgery (Cohen *et al.*, 2018), which is associated with an increased risk of continued postoperative treatment, being 1.6 times less cost-effective and an associated increased hospitalisation cost of almost \$7000 when compared to primary TKR (Cheuy *et al.*, 2017). The outcomes of surgically treated posttraumatic fibrosis of the knee are poor, with most patients unable to return to pre-injury / surgery level of function.

How the STAK treatment works

The STAK is a clinically proven, patented class 1 medical device for home use which enables the patient to generate the high intensity stretches required to break down the dense scar tissue facilitating new tissues to form; reducing pain, stiffness and improving ROM, strength and function.

Standard physiotherapy home exercises do not enable the patient to generate the high-intensity stretching of the knee required. Home exercises have been found to produce less than 10% of the torque applied by a physiotherapist (Uhl *et al.*, 2011). Stretching and manipulations at joint end range by physiotherapists must be carried out daily to be effective (Davies and Ellenbecker., 2011; Jacobs and Sciascia., 2012). There are simply not the resources to do this in the NHS or even in private healthcare.

- ✓ The STAK is light, easy to use and re-usable. Unlike the JAS it does not require single use custom fitting.
- ✓ The patient is in full control of the intensity of the stretch, using their own body weight and leverage.
- ✓ It is safe, highly effective and motivating.

The STAK enables the patient to carry out both dynamic stretching of the tendons, and static stretching of the muscle fibres leading to long lasting increase in ROM, function and pain.

The STAK tool allows patients to administer high intensity knee rehabilitation daily in the comfort of their home. The STAK has a self-motivating feedback scale, which empowers patients, giving them the best possible outcomes for their knee.

Research

35 patients post-major knee surgery with arthrofibrosis and mean ROM of 68° were recruited and block randomised to STAK or control group.

Compared to the control group, the STAK intervention group made significant gains mean ROM (30° versus 8°, $p < 0.0005$),

WOMAC (19 points versus 3, $p < 0.0005$), and OKS (8 points versus 3, $p < 0.0005$). The improvements in the STAK group were maintained at long-term follow-up. Extension and swelling also significantly improved in the STAK group compared to control. No patients suffered any complications relating to the STAK, and 96% of patients found the STAK tool 'perfectly acceptable'.

Following the 8 week treatment periods the 15 patients who had received standard physiotherapy alone (control) were given the opportunity to use the STAK at home for 8 weeks. They achieved an additional mean increase in ROM of 21°.

Supported by clinical research trials <https://online.boneandjoint.org.uk/doi/full/10.1302/2633-1462.18.BJO-2020-0096> and NICE review <https://www.nice.org.uk/advice/mib252/chapter/The-technology>, the STAK tool is highly effective in treating the most severe arthrofibrosis cases giving patients' their quality of life back, even when expensive manipulation under anaesthetic and revision surgery has failed.

Current STAK availability

The STAK is currently being used by NHS and private hospitals.

I am offering training sessions for both surgeons and physiotherapists and supply STAKs for long term hire or purchase.

I also treat patients referred by surgeons myself via zoom. So whatever the severity of your patient case get in touch!

Please see links to surgeons' and patients' talking about their experiences of using the STAK and please make contact if you are interested in knowing more about the STAK.

University Hospitals of Leicester NHS Trust Surgeons' views

Mr Aujla Clip <https://youtu.be/krwsS6ZrCXE>

Professor Ashford <https://youtu.be/aCuRI2hfRZg>

Mr Elsarafy <https://youtu.be/Oa4XjBfPZnw>

Patients' views

-Patient ID: 05 daily activities after using STAK <https://youtu.be/swUNRIZ3nHM>

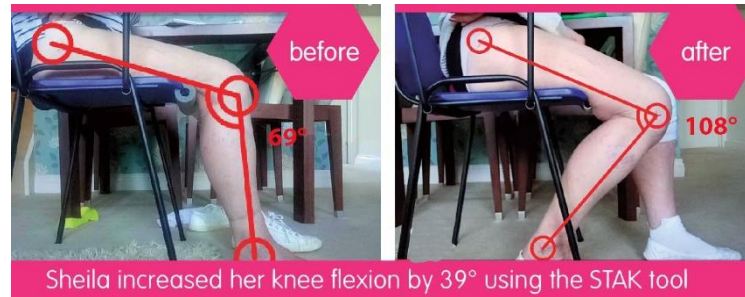
-ID: [13 Thoughts on STAK Tool and advice to others](https://www.youtube.com/watch?v=DVuPLf84qME) <https://www.youtube.com/watch?v=DVuPLf84qME>

Kind regards,



Sara Aspinall
(PhD, MSc, BSc (Hons) Physiotherapy, MCSP)
Director STAK Orthopaedics

Ltd M: 07799521653 E: info@stakneestretcher.com W: www.stakneestretcher.com



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