Always innovating, never imitating

In over 20 years of clinical use, TSF has been used to treat more than 132,000 patients with deformity or traumatic injury in over 50 countries around the world.

*Viktor, Age 7**

95% of treatment goals were achieved in 425 children undergoing deformity correction[1]

15.5 weeks to consolidation reported in 4 studies looking at paediatric fractures[1]

94% of paediatric patients were managed without need for further surgery, in 3 studies that reported complications at a per patient level[1]

Smith+Nephew

TAYLOR SPATIAL FRAME◊

External Fixator

Children

TAYLOR SPATIAL FRAME◊ External Fixator

1996 Orthopaedic Surgeon J. Charles Taylor collaborated with Smith+Nephew to develop the TAYLOR SPATIAL FRAME (TSF◊) External Fixator.

Dr. Taylor took mathematical algorithms already employed by the aerospace and automotive industries, and married them to Professor Ilizarov's principles of Distraction Osteogenesis to produce the first-of-its-kind hexapod for limb reconstruction.

The TSF construct is two rings attached to bone and connected by six telescoping struts. A prescription for strut adjustment is generated by web-based software allowing correction of deformity in six axes simultaneously, and achieving reduction to within 1mm and 1°.

More than
200
clinical publications reference TAYLOR SPATIAL FRAME[1]

Every year we connect
500
surgeons around the world with master faculty at our industry-leading instructional courses

Smith+Nephew has led the education of orthopaedic surgeons in circular fixation since the first trip to Kurgan in
1988

We help you push the boundaries in limb restoration and allow your patients to rediscover the joy of **Life Unlimited**.

TAYLOR SPATIAL FRAME◊ External Fixator is the **most widely used hexapod in the world.**

95% of treatment goals were achieved in 425 children undergoing deformity correction[1]

99% consolidation in 15 weeks reported by four studies[1]

94% of patients did not require further surgery for complications[1]

In **over 20 years of clinical use,** TSF has been used to treat more than 132,000 patients with deformity or traumatic injury in over 50 countries around the world.

95% of treatment goals were achieved in 425 children undergoing deformity correction[1]

The impact of Congenital Skeletal Deformity

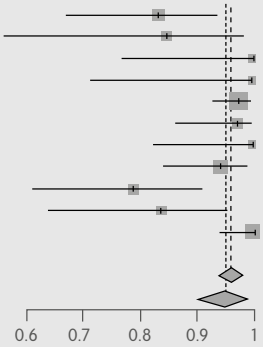
Anatomical deformity has an impact on the normal biomechanical function of the skeleton, and over time such impairment may lead to degenerative changes in the muscles and joints.[17]

TAYLOR SPATIAL FRAME◊ Solution

TAYLOR SPATIAL FRAME can simultaneously correct deformities in multiple planes[2] and has the longest clinical follow up of all hexapods[8]

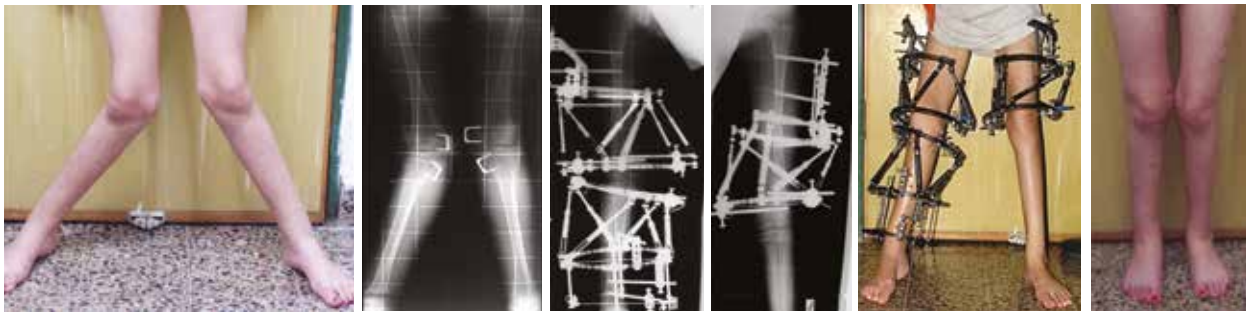
Proportional meta-analysis of studies (with at least 10 patients) assessing the use of TSF for deformity correction in children.

Study	Treatment Goals Achieved	Total	Proportion	95%-CI	Weight (fixed)	Weight (random)
Blondel et al 2009	30	36	0.83	[0.67; 0.94]	8.5%	9.9%
Eidelman and Katzman 2008	11	13	0.85	[0.55; 0.98]	3.1%	6.5%
Eidelman et al 2010	14	14	1.00	[0.77; 1.00]	3.4%	6.7%
Eidelman et al 2012	11	11	1.00	[0.72; 1.00]	2.7%	5.9%
Horn et al 2017	114	117	0.97	[0.93; 0.99]	27.3%	12.5%
Koren et al 2016	37	38	0.97	[0.86; 1.00]	8.9%	10.0%
Küçükkaya et al 2009	19	19	1.00	[0.82; 1.00]	4.5%	7.8%
Naqui et al 2008	50	53	0.94	[0.84; 0.99]	12.4%	10.9%
Reitenbach et al 2016	26	33	0.79	[0.61; 0.91]	7.8%	9.6%
Sachs et al 2015	21	25	0.84	[0.64; 0.95]	5.9%	8.7%
Tsibidakis et al 2014	66	66	1.00	[0.95; 1.00]	15.4%	11.5%
Fixed effect model		**425**	**0.96**	**[0.94; 0.98]**	**100.0%**	--
Random effects model			**0.95**	**[0.90; 0.99]**	--	**100.0%**



Smith+Nephew 2019. Systematic literature review with meta-analysis of TSF clinical effectiveness. Internal report. EO/TRAUMA/TSF/001/v6.

Fourteen-year-old girl with bilateral genu valgum



Images courtesy of Mark Eidelman MD

Consolidation in 15.5 weeks reported in four studies[1]

Challenge

Tibial fractures are common injuries in children and most of them are managed by non-operative means. Unstable fractures or those at risk of compartment syndrome, may require surgical stabilization. Fixation options are different to the adult population because of the risk of physeal injury[21,22]

TAYLOR SPATIAL FRAME◊ Solution

"External fixation and, specifically, hexapodal fixators can therefore be an interesting alternative in the management of particular fractures when conventional treatment is contraindicated. The theoretical advantages of hexapodal external fixation are the possibility of an anatomical reduction of the deformity by dedicated web-based software, rapid weight bearing and good skin surveillance" [19]

Blondel et al Journal of Pediatric Orthopaedics B 2010, 19:487–491

Studies reporting time to heal in pediatric acute trauma

Author	Weeks to heal	Weeks in frame
Tafazal *et al* 2014	14.8	14.8
Zenios 2013	21.5	16.5
Blondel *et al* 2010	14	14
Shore *et al* 2016	12.7	12
Weighted means for paediatric acute trauma	**15.5 weeks**	**14.2 weeks**

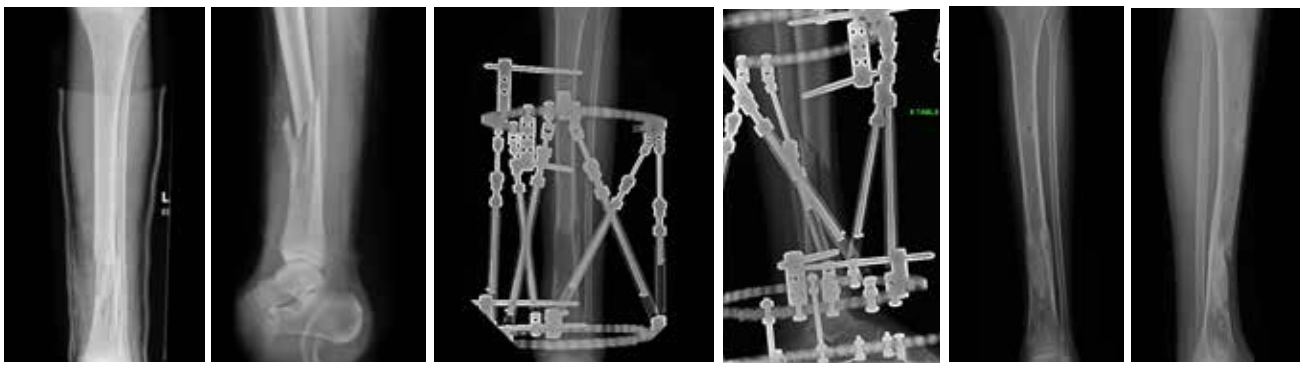
Smith+Nephew 2019. Systematic literature review with meta-analysis of TSF clinical effectiveness. Internal report. EO/TRAUMA/TSF/001/v6.

Results for acute trauma in children

Study	Cohort	Treatment goals achieved
Blondel *et al* 2010	11 children with tibial fractures	9/11 (81.8%)
Shore *et al* 2016	16 children with diaphyseal tibia fractures	16/16 (100%)
Tafazal *et al* 2014	15 patients (mean age of 12.7 years)	15/15 (100%)
Zenios 2013	12 children with unstable tibial fractures	12/12 (100%)

Proportional meta-analysis of studies (with at least 10 patients) assessing the use of TSF for acute trauma in paediatric populations.
Smith+Nephew 2019. Systematic literature review with meta-analysis of TSF clinical effectiveness. Internal report. EO/TRAUMA/TSF/001/v6.

Twelve-year-old boy open tibial shaft fracture



Images courtesy of Philip McClure MD

94% of patients did not require further surgery for complications[1]

Challenge

External Fixation is often associated with more complications than traditional internal fixation methods

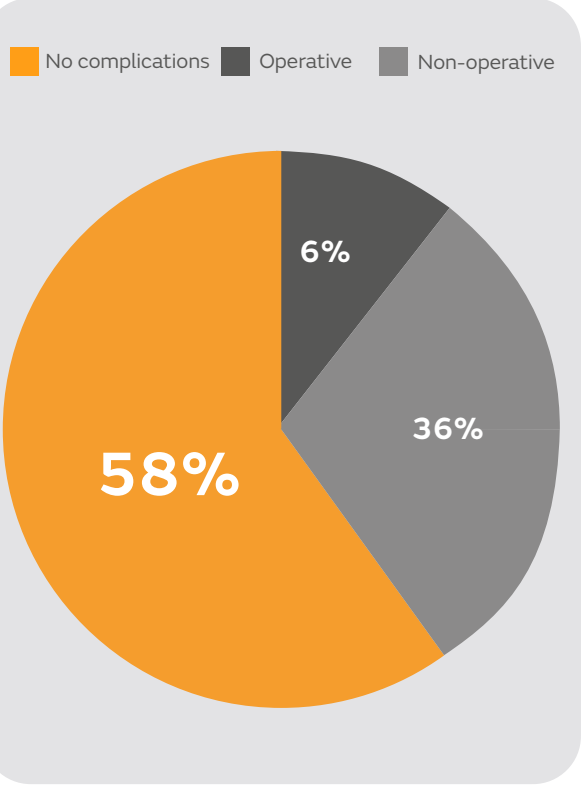
TAYLOR SPATIAL FRAME◊ Solution

Complications such as pin site infection are usually managed conservatively without compromising the success of the treatment

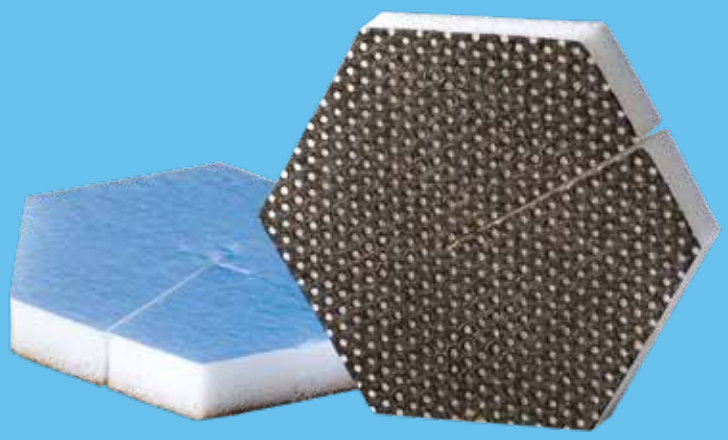
Number of patients who experienced complications from three paediatric studies across all indications.

Study Author	Number of patients with opera tive interventions	Number of patients with non-operative interventions	Number of patients without complications
Blondel *et al* 2010	0	1	10
Sachs *et al* 2015	0	11	14
Eidelman *et al* 2012	3	5	4

Smith+Nephew 2019. Systematic literature review with meta-analysis of TSF clinical effectiveness. Internal report. EO/TRAUMA/TSF/001/v6.



Systematic literature review with meta-analyses of TSF clinical effectiveness EO/TRAUMA/TSF/001/v6



Nanocrystalline Silver has been shown to act as an effective antimicrobial barrier.[9-12]

ACTICOAT◊ EXFIX contains a nanocrystalline silver layer that has been shown to be effective against over 150 pathogens*[13-16]

ACTICOAT rapidly kills bacteria in as little as 30 minutes*[13-16]

*As demonstrated *in vitro*

In over 20 years of clinical use, TSF◊ has been used to treat more than 132,000 patients with deformity or traumatic injury in over 50 countries around the world.

Progression over ten years: Twelve-year-old boy with post-traumatic partial growth arrest and double level tibial deformities.

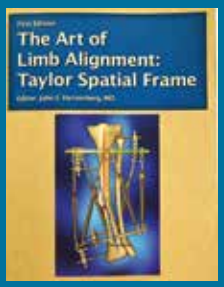
Images courtesy of Mark Eidelman MD

"...About a year ago, Taylor's computer-interface patent expired. As expected, competitors drooled with anticipation of tapping into the deformity correction market. A number of new circular fixators – each with an integrated computer program – appeared on fabric-covered tables at the world's orthopedic meetings. The products' champions lauded their imagined advantages over the TAYLOR SPATIAL FRAME™: a tweak here, a nip there, and yes, the strut colored markers are prettier too!

Rest assured, dear reader: many moons will pass before the proponents of the aforementioned gadgets will accumulate the wisdom contained herein..."

Stuart A. Green, MD Clincal Professor,
Orthopedic Surgery University
of California, Irvine

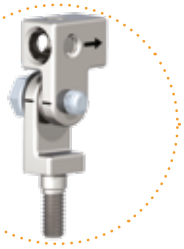
Foreword to *"the Art of Limb Alignment: TAYLOR SPATIAL FRAME"* RIAO,
Sinai Hospital of Baltimore



SPATIALFRAME.com

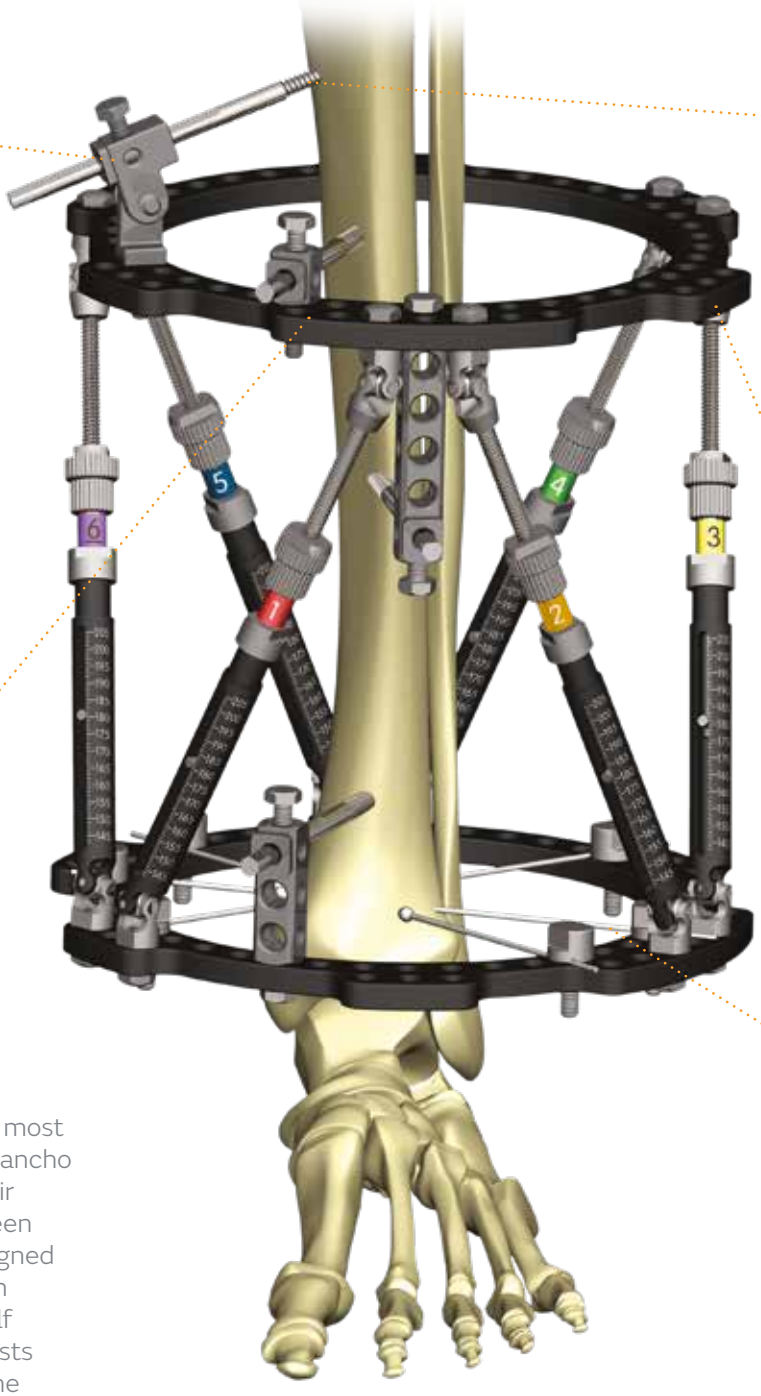
How TAYLOR SPATIAL FRAME◊ External Fixator Works

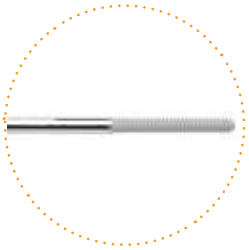
With streamlined instrumentation and innovative hardware, the TAYLOR SPATIAL FRAME External Fixator offers the maximum benefits of a circular fixator without the complexity of traditional Ilizarov methods.[2,3,5]



Angled Pin Connector

Angled Pin Connectors allow for the placement of a steerage pin, which provides stability in oblique fractures[5,6]





Half Pin

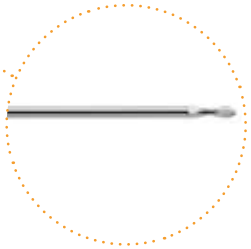
Hydroxyapatite Coated Half Pins have a tapered minor – constant major diameter for improved bi-cortical purchase.

Circular frame

The 7-hole Tab offers more options for fixation and flexibility for Strut attachment.

Rancho with Post

Smith+Nephew offers the most comprehensive range of Rancho cubes and posts since their design by Dr. Stuart A. Green in 1991. Ranchos are designed to be modular, for use with 4mm, 5mm, and 6mm Half Pins. Threaded Rancho Posts are designed to simplify the connection of Pins to Rings.



Wires

Wires are designed to be minimally invasive and to allow for stable fixation in small fragments.

Drill tip wires reduce heat generation and chance of thermal necrosis.[7*]

**tested at 700rpm in vitro*

Smith & Nephew, Inc.
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USA

www.smith-nephew.com

17128 V2 07/20

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