

# Return to Activity Following Tibial Tubercle Osteotomy for Chronic Patellar Instability: A Systematic Review and Meta-Analysis

Andrew Bagley, SPT, ATC, CSCS; Jensen LeJeune, SPT, ATC; Kristiana Warth, SPT; John Justyn, SPT; Lauren Cordova, SPT; John R. Magill, PT, DPT; Michael P. Reiman, PT, PhD, MEd, ATC

## Background

- Tibial Tubercle Osteotomy (TTO)** is a surgical procedure used to improve the alignment of the patella by changing the insertion point of the patellar tendon on the tibial tubercle.
- Return to sport and/or duty following surgery is a significant goal that needs to be considered by those undergoing the procedure.

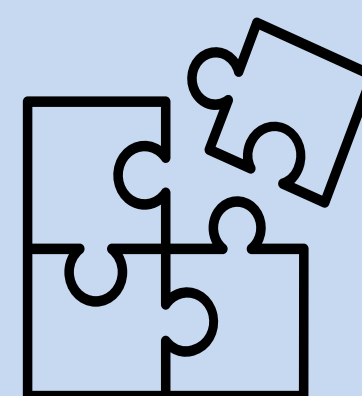
## Purpose

- Evaluate the use of TTO surgical intervention as treatment for recurrent patellar dislocations.
- Determine effective RTS / RTD proportions following TTO.

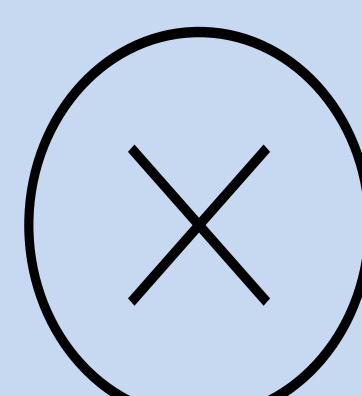
## Methods



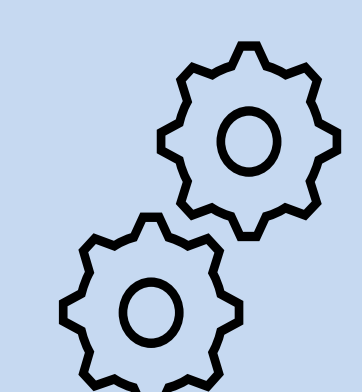
**Databases:** Medline, CINAHL, Embase, SportDiscus



**Inclusion:** Human subjects, all ages, TTO for patellar instability, RTS or RTD, > 10 participants, English language, prospective or retrospective



**Exclusion:** Non-human subjects, non-surgical studies, TTO not performed, studies not reporting RTS or RTD, case studies with < 10 participants, not original study



**Outcomes:** Satisfaction scale, KOOS, Kujala, Tegner, KSS, VAS Pain, IKDC, rehab guidelines varied, RTS or RTD



*Courtesy of Locrotando et al. (2017)*

## Results

- Article Inclusion:** 13 studies (9 RTS, 4 RTD) out of 1188 identified in database search.
- Risk of Bias:** 1 High quality, 11 Medium quality, and 1 Low quality.
- Total Patients:** 502 (153 RTD, 349 RTS)
- Common Sports:** Volleyball, soccer, running, basketball
- Surgical:** 57% of TTOs were anteromedializations. Lateral release was performed concomitantly in 35.3%.
- Rehabilitation Guidelines:** Highly variable in weight-bearing restrictions, immobilizer use, CPM use, and ROM protocols.
- Readiness for Return:** Isokinetic strength with limb symmetry comparison was the most used measure
- Career Longevity:** One study reported that only 10.5% of service members performed an active duty deployment following TTO.

## Analysis

	Return to Activity (RTA)	Return to Sport (RTS)	Return to Sport at Previous Level (RTSP)	Return to Duty (RTD)
<b>Total</b>	334	281	124	153
<b>Returned</b>	232	203	60	106
<b>Ratio</b>	0.69	0.72	0.48	0.69
<b>P-value</b>	0.0*	0.0*	0.0*	0.2
<b>I<sup>2</sup></b>	89.1%	92.5%	94.0%	38.7%
<b>Articles Reporting</b>	12	8	3	4

## Conclusions

- 69% of patient return to some level of activity postoperatively
- Limitations often persist following return, restricting return to pre-surgical levels of activity
- Guidance in rehabilitation is highly variable

## Clinical Relevance



Tibial tubercle osteotomies serve as a final attempt to correct chronic patellar instability. However, functional limitations often persist following rehabilitation.

## Acknowledgements / References

We would like to acknowledge research and education librarian Brandi Tuttle for her assistance with the database search. References available upon request.

