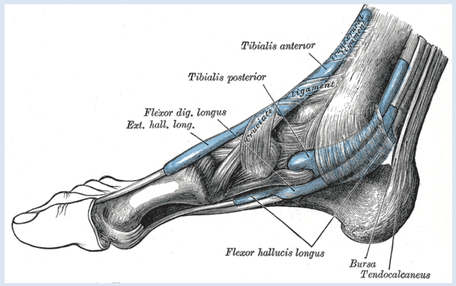
Comprehensive Physical Therapy Treatment Following a Surgical Repair of a Flexor Hallucis Longus Tendon in a Skateboarder: A Case Report

UNIVERSITY OF NEW ENGLAND

Joseph Marcil, DPT student; Kirsten Buchanan PhD, PT, ATC
Department of Physical Therapy, University of New England, Portland, Maine

Unique

- Flexor Hallucis Longus (FHL) injuries occur when stress is placed on the great toe.
- FHL tendinopathies are common in ballet dancers,[1] however, not often seen in skateboarders.
- The most effective physical therapy (PT) rehabilitation protocol for an FHL tendinopathy and subsequent repair in a skateboarding athlete has not been well documented.



Purpose

- To investigate a comprehensive PT protocol, including video feedback after an FHL repair in a skateboarding athlete.

Foundation

- Skateboarding injuries increased 378.9% between 1994-2008 as the sport gained popularity.[2]
- Michaelson and Dunn (2005) reported 100% of the patients receiving surgery for an FHL tear (n=23) had successful clinical outcomes.[1]
- Conservative treatments have included stretching, modalities, and short term immobilization.[1]
- Video feedback has been broadly researched in movement and sports performance,[3] but not in post-surgical FHL patients.

Description

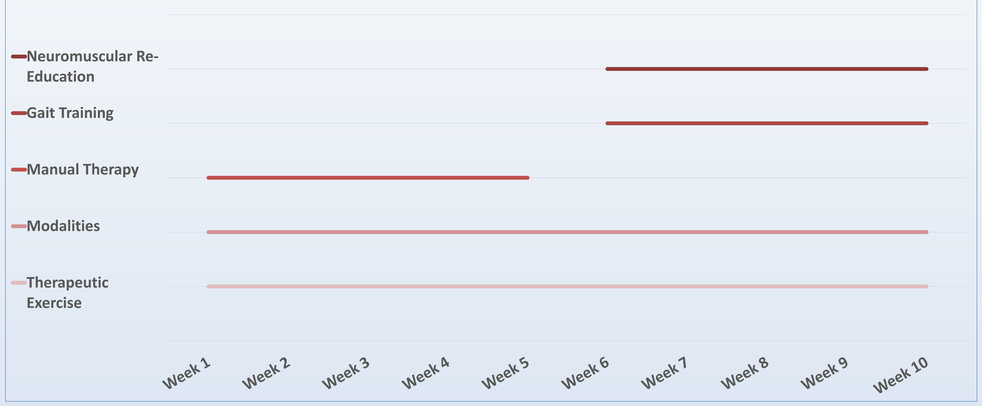
Patient:

- A 20 year-old male who sustained a right ankle sprain after a skateboarding accident 4 years ago.
- After 4 years of conservative treatment he underwent exploratory surgery where a 2.5-3.0 mm tear in the right FHL tendon was found and repaired.

Rehabilitation:

- The initial PT examination found impairments in right ankle and great toe range of motion, strength, swelling, pain, function and gait.
- PT consisted of 30-45 minutes, twice weekly for 10 weeks.
- Interventions included: passive range of motion (PROM) stretching, soft tissue massage, joint mobilizations, modalities, balance, proprioceptive, and strengthening exercises and gait training with video feedback.

Treatment Timeline



Right ankle incision site status/post 5 weeks.

Right ankle during weight bearing.

Observations

	Initial Exam:	Discharge:
Range of Motion (degrees)	PROM R ankle: DF: -16° PF: 52° INV: 11° EV: 14° pain MTP 1 flex: 20° MTP 1 ex: 40° pain	AROM R ankle: DF: 20° PF: 50° INV: 30° EV: 15° MTP flex: 30° MTP 1 ex: 45°
Strength (MMT)	R ankle NT L ankle full	R ankle full R MTP1 flex/ex full
Edema (cm)	L: 53.5 R: 55.1	L: 53.5 R: 53.7
Numeric Pain Rating Scale	6/10 at rest and with activity	0/10 at rest and with activity
Lower Extremity Functional Scale	22/80 =27.5%	53/80= 66.25%

PROM= passive range of motion, AROM= active range of motion, flex= flexion, ex= extension, R= right, L= left, DF= dorsiflexion, PF= plantarflexion, INV= inversion, EV= eversion, MMT= manual muscle testing, MTP= metatarsophalangeal, cm=centimeters NT= not tested

Conclusions

- This case report suggested that a comprehensive PT program that included stretching, strengthening, functional activities, and video feedback for gait training was beneficial in returning a former skateboarder back to full function after an FHL repair.

References

1. Michelson J. Dunn L. Tenosynovitis of the Flexor Hallucis Longus: A Clinical Study of the Spectrum of Presentation and Treatment. *Foot Ankle Int*. 2005;26(4):291-303. doi 10.1177/107110070502600405.
2. McKenzie L, Fletcher E, Nelson N, Roberts K, Klein E. Epidemiology of skateboarding-related injuries sustained by children and adolescents 5-19 years of age and treated in US emergency departments: 1990 through 2008. *Inj Epidemiol*. 2016;3(1). doi:10.1186/s40621-016-0075-6.
3. Aiken C, Fairbrother J, Post P. The Effects of Self-Controlled Video Feedback on the Learning of the Basketball Set Shot. *Frontiers in Psychology*. 2012;3. doi:10.3389/fpsyg.2012.00338.
4. Grey's Anatomy. *Anatomy Of The Human Body*.; 1918. Available at: https://en.wikipedia.org/wiki/Flexor_hallucis_longus_muscle#/media/File:Gray442.png. Accessed November 16, 2016.

Acknowledgments

- The author acknowledges Kirsten Buchanan, PhD, PT, ATC for assistance with the case report, and Katherine Mahoney, PT, DPT, CCCE and Janine Sciuto, PT for their supervision.

Contact Information

Joseph Marcil, DPT student
jmarcil1@une.edu