

Podiatric Surgical Procedures: Considerations, Application & Management

Live Interactive Webinar
Presented By
Jodi Gootkin, PT, MEd, CEAS
jodiemail@comcast.net

1

Copyright Jodi Gootkin 2023

1

Course Overview

- “Podiatric Surgical Procedures: Considerations, Application & Management” is a live (real-time) interactive webinar for rehabilitation professionals that examines surgical procedures to manage common orthopedic pathologies of the distal lower extremity. This course includes a review of current literature relating to surgical procedures for tendons, ligaments, and bones of the foot and ankle.

2

Copyright Jodi Gootkin 2023

2

Course Rationale

- The purpose of this course is to provide an understanding of the current trends in surgical procedures to manage degenerative, traumatic and non-traumatic pathologies of foot and ankle. The emphasis is comparative analysis of contemporary surgical techniques to restore distal lower extremity function through repair tendons, ligaments, and bones.

3

Copyright Jodi Gootkin 2023

3

Goals and Objectives

1. List and identify common anatomical structures of the foot and ankle.
2. Distinguish degenerative, traumatic, and non-traumatic foot and ankle pathologies.
3. Identify emerging surgical techniques for foot and ankle orthopedic pathologies.
4. Identify contemporary theories regarding weight bearing after ankle fracture stabilization surgery.
5. Compare procedures to address chronic ankle instability.
6. Distinguish peroneal tendon stabilization from repair.
7. List surgical mechanisms to restore pes planus foot alignment.
8. Describe techniques to manage cartilage damage in the ankle.
9. List the indications for ankle arthrodesis.
10. Identify post-surgical considerations for procedures of the foot and ankle.

4

Copyright Jodi Gootkin 2023

4

Disclaimer

- Application of concepts presented in this webinar is at the discretion of the individual participant in accordance with federal, state, and professional regulations.
- No conflict of interest exists for the presenter or provider of this course.

5

Copyright Jodi Gootkin 2023

5

Topic	Time
Anatomy and Arthrokinematics	0:00-0:10
Anesthesia and Pain Management	0:11-0:20
Hardware and Grafting	0:21-0:25
Hallux Valgus Osteotomy	0:26-0:35
Plantar Fasciotomy and Gastrocnemius Recession	0:36-0:50
Interactive Discussion of Clinical Applications	0:51-1:00
Ankle Fracture Fixation Considerations	1:01-1:05
Syndesmosis Stabilization	1:06-1:15
Chronic Ankle Instability Procedures	1:16-1:30
Peroneal Tendon Stabilization and Repair	1:31-1:40
Pes Planus Procedures	1:41-1:50
Interactive Discussion of Clinical Applications	1:51-2:00
Achilles Tendon Repair and Reconstruction	2:01-2:20
Anterior Ankle Impingement Arthroscopy	2:21-2:25
Osteochondral Lesions of Talus Cartilage Techniques	2:26-2:35
Ankle Arthrodesis	2:36-2:40
Total Ankle Arthroplasty	2:41-2:45
Post-Surgical Considerations	2:46-2:50
Interactive Discussion of Clinical Applications	2:51-3:00

Course Outline and Schedule


3-hour live interactive webinar

6

Copyright Jodi Gootkin 2023

6

How To Obtain CEUs For This Course

- Course review and summary for post test at the end of the webinar. 
- After the live interactive webinar and prior to 11:59 pm TONIGHT go to www.cheapceus.com
- Complete the post test with score of at least 70%
 - May be retaken multiple times
- Submit online payment for course
- Print certificate

7

Copyright Jodi Gootkin 2023

7

Course Post Test

- Slides with “Consider This” icon in bottom right corner will be helpful in completing the post-test.



8

Copyright Jodi Gootkin 2023

8

Regions of the Foot

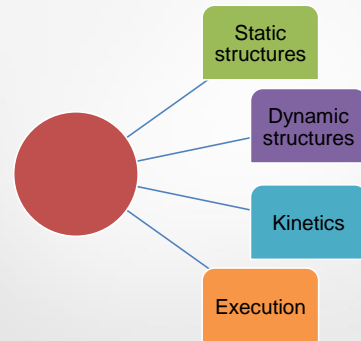
Hindfoot	Talocrural and Subtalar	Tibia, Fibula, Talus, Calcaneus
Midfoot	Transverse tarsal, talonavicular, calcaneocuboid, TMT	Navicular, Cuboid, 3 Cuneiforms, Metatarsals
Forefoot	Tarsometatarsal, MTP, PIP, DIP	Metatarsals, Phalanges, Sesamoids

9

Copyright Jodi Gootkin 2023

9

Arthrokinematics



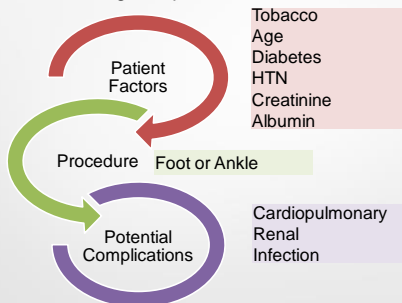
10

Copyright Jodi Gootkin 2023

10

Pre-Operative Considerations

- ACS-NSQIP surgical risk calculator informs surgical decision making and patient informed consent.



11

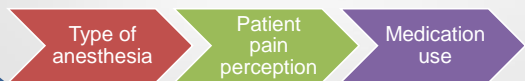
Kisana, H., et al. (2022). Development of a Risk Stratification Scoring System to Predict General Surgical Complications for Patients Undergoing Foot and Ankle Surgery. *Orthopedics*, 45(3), 139-144.

Copyright Jodi Gootkin 2023

11

Anesthesia

- No consensus on whether general or neuraxial anesthesia is superior for patients undergoing foot and ankle procedures.
- Peripheral nerve blocks may contribute to reduced pain levels and opioid use.
 - May mask compartment syndrome and VTE symptoms
 - Monitor for rebound pain

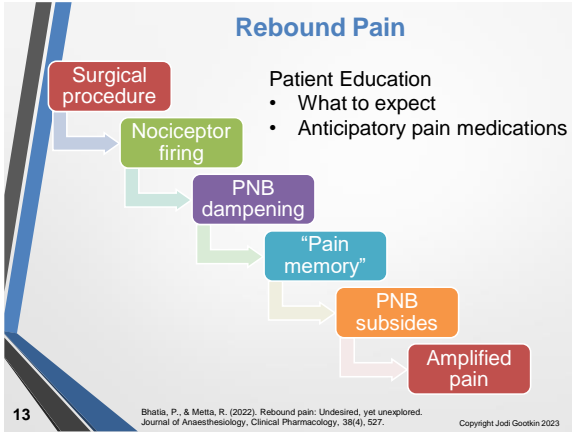


Quan, T., et al. (2022). Evaluating the Association of Anesthesia Type With Postoperative Complications in Patients Undergoing Ankle Fracture Repair. *The Journal of Foot and Ankle Surgery*.

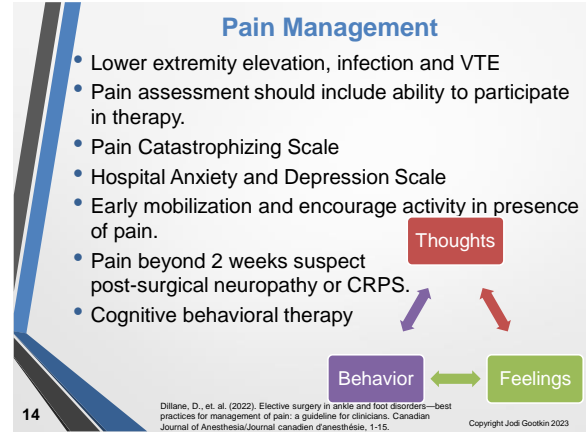
Mateen, S., et al. (2021). Retrospective chart review of perioperative pain management of patients having surgery for closed ankle fractures using peripheral nerve blocks at a level one trauma center. *Pain Reports*, 6(1).

Copyright Jodi Gootkin 2023

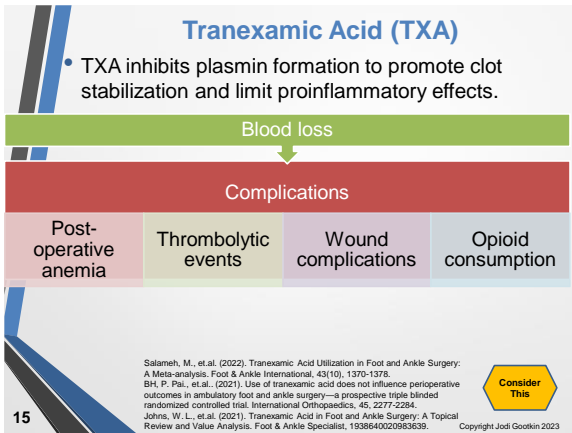
12



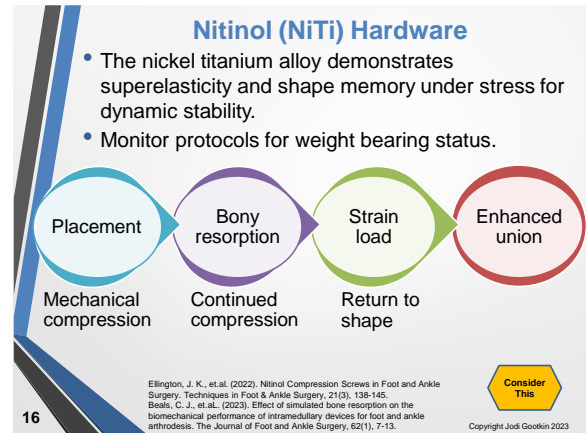
13



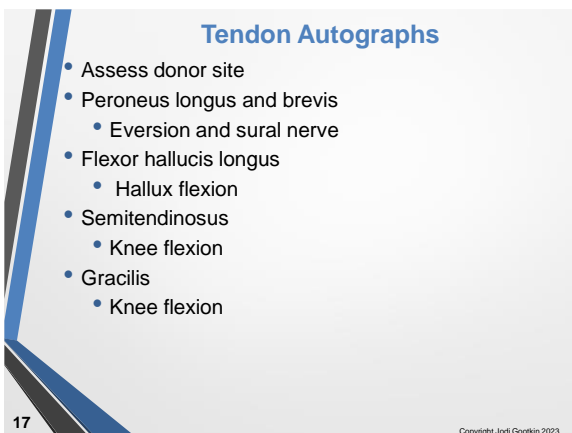
14



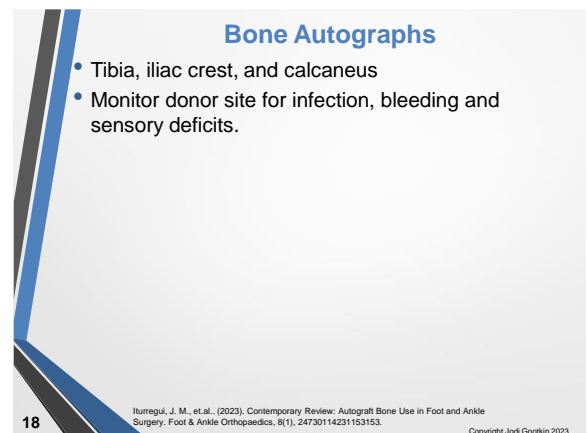
15



16



17



18

Hallux Valgus

- Lateral deviation of great toe proximal phalanx and medial deviation of first metatarsal head.
- Footwear etiology or exacerbator?

Severity Classification	Mild	Moderate	Severe
Hallux Valgus Angle	<20°	20-40°	>40°
Intermetatarsal Angle	9-11°	11-16°	>16°

Resect
↓
Realign
↓
Stabilize

19 Ray, J. J., et al. (2019). Hallux valgus. *Foot & Ankle Orthopaedics*, 4(2), 2473011419838500. Copyright Jodi Gootkin 2023

19

Osteotomy

Open	Minimally Invasive
<ul style="list-style-type: none"> Chevron: 1st metatarsal distal head Akin: 1st proximal phalanx base Scarf: 1st metatarsal Z-cut 	<ul style="list-style-type: none"> Minimally Invasive Chevron Akin (MICA) Percutaneous Chevron Akin (PECA)

20 Copyright Jodi Gootkin 2023 Ray, J. J., et al. (2019). Hallux valgus. *Foot & Ankle Orthopaedics*, 4(2), 2473011419838500. Copyright Jodi Gootkin 2023

20

Hallux Valgus Osteotomy Considerations

- Post-operative pain
- Ambulation with surgical shoe progressing to roomy supportive footwear.
- Driving restrictions
- PROM NWB → Seated AROM → Seated WB
- Balance and gait
 - Recurrence
 - Transfer metatarsalgia

21 Image: CC BY 4.0 Dammerer, D., et al. (2016). Effect of surgical shoes on brake response time after first metatarsal osteotomy—a prospective cohort study. *Journal of Orthopaedic Surgery and Research*, 11, 1-6. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4715548/>
CC BY 2.0 Shaha, S. N., et al. (2020). Mitchell's considerations in the management of hallux valgus: An Indian perspective. *Indian journal of orthopaedics*, 43(1), 76-81. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC739465/>. Copyright Jodi Gootkin 2023

21

Plantar Fasciitis

- Degenerative fasciitis without inflammation.

Conservative	Minimally Invasive	Surgery
Pain 3-6 months • Therapy, splints/orthotic, activity modification	Pain > 6 months • Corticosteroid injection • Extracorporeal shock wave therapy • Platelet Rich Plasma	Recalcitrant pain • Plantar fasciotomy • Gastrocnemius recession

22 Consider This
Copyright Jodi Gootkin 2023

22

Plantar Fasciotomy

- There is no consensus on percentage of medial fascia to release.

Endoscopic or Percutaneous	<ul style="list-style-type: none"> Hook blade Early boot WB and AROM
Open	<ul style="list-style-type: none"> Plantar or medial incision

23 Copyright Jodi Gootkin 2023

23

Concurrent Procedures

- Baxter's nerve decompression
 - Sensory - calcaneal periosteum and long plantar ligament
 - Motor - abductor digiti minimi
- Calcaneal spur resection

24 Ozkan, M., et al. (2023). Do the presence, size, and shape of plantar calcaneal spurs have any significance in terms of pain treatment outcomes in patients with plantar fasciitis?. *Turkish Journal of Medical Sciences*, 53(1), 413-419. Copyright Jodi Gootkin 2023

24

Plantar Fasciotomy Considerations

- Lateral column pain
- Altered medial longitudinal arch height
- Fifth toe abduction strength
- Rehab progression per protocol
 - NWB → FWB in boot, AROM/isometrics ankle and toes
 - Supportive shoes, manual therapy, plantar fascia/gastrocnemius stretching, foot intrinsic strengthening, heel raise progression
 - FWB eccentric/resistance ankle exercise, balance, proprioception, joint mobilization
 - Return to impact activities

25 Liew, S. K., et al. (2022). Foot Arch Changes after Endoscopic Plantar Fascia Release for Recalcitrant Plantar Fasciitis. *Malaysian Orthopaedic Journal*, 16(2), 78. Copyright Jodi Gootkin 2023

25

Gastrocnemius Recession

- Surgical lengthening to restore plantarflexion ROM and normalize forces placed on plantar fascia with weight bearing.
- Strayer Method
 - Musculotendinous junction
- Baumann Procedure
 - Gastrocnemius muscle

26 Sanchez, T., et al. (2023). Factors Associated With Poor Patient-Reported Outcomes in Isolated Gastrocnemius Recession for Heel Pain. *Foot & Ankle Orthopaedics*, 8(2). Copyright Jodi Gootkin 2023

26

Gastrocnemius Recession Considerations

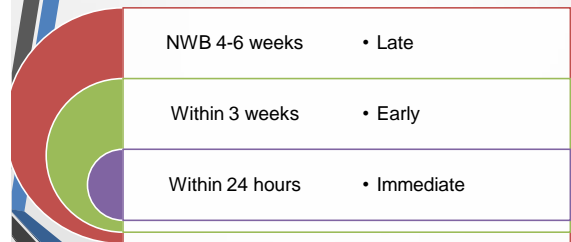
- CAM boot, night splint, stretching, strengthening, manual therapy, gait and balance.
- Manual work to surgical scar.
- Gait training
 - Heel first initial contact position
 - Neutral foot alignment during stance phase
 - Sufficient DF during swing phase of gait
- Also indicated to manage Achilles tendinopathy, equinovarus, metatarsalgia, adult acquired flatfoot.

27 Copyright Jodi Gootkin 2023

27

Ankle Fracture Fixation Considerations

- No consensus on weight bearing restrictions and protection mechanisms postoperatively.



28 Copyright Jodi Gootkin 2023

28

Weight Bearing (WB) Restriction Outcomes

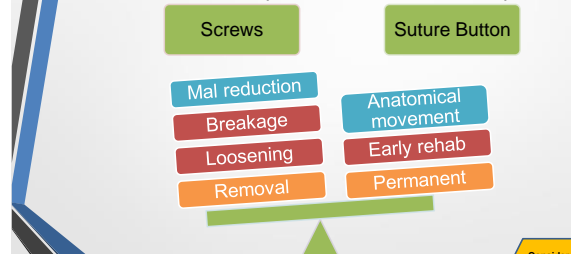
Cohort	Early Protected WB Outcome
Elderly	Quality of life under reported No increased complications
Adults	Same complication rate Improved short term function Comparable function medium term
Adults	Improved short term function and overall health Comparable medium term

29 van Halbeem, M. S., et al. (2022). An overview on the treatment and outcome factors of ankle fractures in elderly men and women aged 80 and over: a systematic review. *Archives of Orthopaedic and Trauma Surgery*, 142(11), 3311-3325. Khajaly, R., et al. (2022). Weight-bearing allowed following internal fixation of ankle fractures: a systematic literature review and meta-analysis. *Foot & Ankle International*, 43(3), 1143-1156. Schubert, J., et al. (2020). Effect on overall health status with weightbearing at 2 weeks vs 6 weeks after open reduction and internal fixation of ankle fractures. *Foot & Ankle International*, 41(6), 658-665. Copyright Jodi Gootkin 2023

29

Syndesmosis Stabilization

- Ligamentous injury of the distal tibiofibular joint can occur concurrent with ankle fracture or in isolation.
- No consensus on optimal stabilization technique.



30 Rogero, R. G., et al. (2021). Management of Ankle Fractures With Syndesmotic Disruption: A Survey of Orthopaedic Surgeons. *Cureus*, 13(7). Copyright Jodi Gootkin 2023

30

Suture Button

- Designed to provide stability while maintaining physiologic motion.
- Allows earlier weight bearing and eliminates need for removal surgery.

31

Copyright Jodi Gootkin 2023

31

Syndesmosis Stabilization Considerations

- Rigid fixation procedures - NWB postoperatively
- Dynamic stabilization procedures - early weight bearing.
- No consensus on screw removal.
 - Concern for adjacent joint arthritis.
- Caution with activities applying vigorous translation and compressive forces to suture button fixation.

32

Klapacki, K., et al. (2022). Radiographic Assessment of Tibiofibular Syndesmosis Injury with Different Durations and Types of Fixation. *Journal of Clinical Medicine*, 11(21), 6331.
Meekaw, P., et al. (2022). Biomechanics comparison between endobutton fixation and syndesmosis screw fixation for syndesmosis injury ankle fracture: a finite element analysis and cadaveric validation study. *Journal of Orthopaedics*, 34, 207-214. Copyright Jodi Gootkin 2023

32

Chronic Ankle Instability (CAI)

- History of at least 1 significant ankle sprain, episodes of “giving way” and/or recurrent sprain and/or “feelings of instability”, diminished function measured by validated tool.
- Mechanical insufficiency cases require surgery.

Anatomic Repair

Anatomic Reconstruction

Non-Anatomic Reconstruction

Gribble, P., et al. (2013). Selection criteria for patients with chronic ankle instability in controlled research: a position statement of the International Ankle Consortium. *Journal of orthopaedic & sports physical therapy*, 43(6), 585-591. Copyright Jodi Gootkin 2023

33

33

CAI - Broström Anatomic Repair

- Brostrom – “gold standard”
 - Anterior talofibular ligament repair with or without calcaneofibular ligament repair
- Gould modification
 - Extensor retinaculum to reinforce repair
- Suture Tape Augmentation

34

Consider This

Copyright Jodi Gootkin 2023

34

CAI - Anatomic Lateral Ligament Reconstruction

- Indicated when ligaments are inadequate for repair, general laxity, high demand, activities obesity.
- Allograft - semitendinosus
- Autograft - semitendinosus, gracilis, peroneus longus, patellar tendon

35

Spennacchio, P., et al. (2022). Anatomic reconstruction of lateral ankle ligaments: is there an optimal graft option?. *Knee Surgery, Sports Traumatology, Arthroscopy*, 1-11. Copyright Jodi Gootkin 2023

35

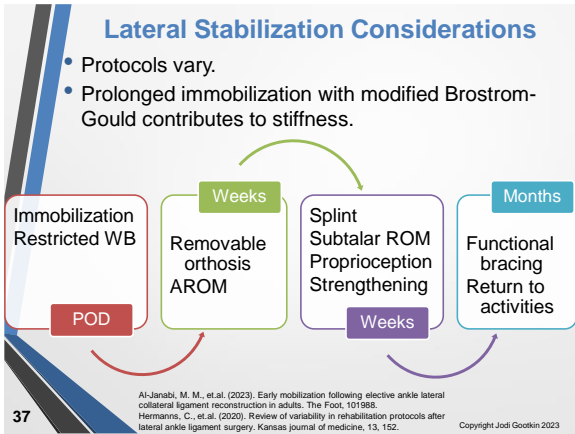
CAI - Non-Anatomic Reconstruction

- Indicated when anatomic repair has failed.
- Tenodesis using peroneus brevis tendon.
 - Watson-Jones, Evans, Chrisman-Snook procedures
- Risk of hindfoot malalignment, limited range of motion and early arthritis.

36

Copyright Jodi Gootkin 2023

36



37

Lateral Stabilization Outcomes

Procedure	Outcome
Reconstruction with gracilis vs. modified Brostrom-Gould	Equivalent long-term function Reconstruction – less sprain recurrence
Brostrom suture tape augmentation with and without early rehab	Early rehab - without repair compromise High patient satisfaction
Brostrom with and without early accelerated rehab	With early rehab - greater short-term strength and proprioception gains

Su, T., et al. (2022). Anatomic reconstruction using the autologous gracilis tendon achieved less sprain recurrence than the Brostrom-Gould procedure but delayed recovery in chronic lateral ankle instability. *Knee Surgery, Sports Traumatology, Arthroscopy*, 1-8.

Martin, K. D., et al. (2021). Suture tape augmented Brostrom procedure and early accelerated rehabilitation. *Foot & Ankle International*, 42(2), 145-150.

Rhyu, H. S., et al. (2023). Effects of accelerated rehabilitation exercise after mbo on ankle function and strength in ankle instability. *Revista Brasileira de Medicina do Esporte*, 29.

Copyright Jodi Gootkin 2023

38

Peroneal In-Office Needle Tendoscopy

- Can be utilized for diagnosis and treatment of tendinopathy.
 - Debride, groove deepening, scar resection, soft tissue release or repair
- Wide-awake local anesthesia no tourniquet (WALNT) allows patient participation.
- Immediate therapy participation.

39

Peroneal Tendon Stabilization

- Tendon subluxation occurs with retinaculum rupture, lateral sprain, peroneus quarto/quintus and calcaneus malunion.
- Stabilization is achieved through retromalleolar deepening and repair of the superior peroneal retinaculum.

Indirect deepening

- Preserves fibrocartilage

Direct deepening

Consider This

Hwang, I. M., et al. (2022). Open peroneal tendon stabilization with fibular groove deepening. *Arthroscopy Techniques*, 11(3), e347-e352.

Copyright Jodi Gootkin 2023

40

Peroneal Tendon Repair and Reconstruction

- Tear - longitudinal or incomplete rupture
- Rupture - complete discontinuity

Reparable

- debridement and tubularization of one or both tendons

Irreparable

- Autograft with hamstrings or side-to-side tenodesis

Last Option

- Flexor hallucis longus or flexor digitorum longus tendon transfer

van Dijk, P. A., et al. (2018). The ESSKA-AFAS international consensus statement on peroneal tendon pathologies. *Knee Surgery, Sports Traumatology, Arthroscopy*, 26, 3096-3107.

Copyright Jodi Gootkin 2023

41

Peroneal Tendon Procedures

- Repair
 - Debridement and/or tenodesis
- Reconstruction
 - Semitendinosus or gracilis autograft
 - Beneficial biological and mechanical properties
- Tendon transfer
 - Flexor digitorum longus or flexor hallucis longus
 - Potential push-off strength deficits
- Superior peroneal retinaculum (SPR) repair

42

Peroneal Procedures Considerations

- Monitor for DVT, paresthesia, and donor site.

SPR Not Repaired	Immobilization no more than 4 weeks AROM 2 weeks then goal-based rehab
PR Repaired	NWB immobilization 2 weeks then WB immobilization 4 weeks AROM 2 weeks Tendon loading 6 weeks Cautious inversion/eversion, scar mobilization

43 van Dijk, P. A., et al. (2018). The ESSKA-AFAS international consensus statement on peroneal tendon pathologies. *Knee Surgery, Sports Traumatology, Arthroscopy*, 26, 3096-3107. Copyright Jodi Gootkin 2023

43

Pes Planus Procedures

- Decreased medial longitudinal arch and hindfoot valgus with many different etiologies.
- Progressive Collapsing Foot Deformity is secondary to posterior tibialis tendon insufficiency.

44 Osbeck, I., et al. (2023). Surgically treated adult acquired flatfoot deformity: Register-based study of patient characteristics, health-related quality of life and type of surgery according to severity. *Foot & Ankle Surgery*, 29(4), 367-372. Copyright Jodi Gootkin 2023

44

Medial Displacement Calcaneal Osteotomy

- Hindfoot valgus correction to achieve a neutral heel.
- Shift achilles tendon moment arm medially alleviating hindfoot eversion force.
- Redistribute plantar pressures decreasing strain on spring and deltoid ligaments, and posterior tibialis tendon.

45 Schon, L. C., et al. (2020). Consensus for the indication of a medializing displacement calcaneal osteotomy in the treatment of progressive collapsing foot deformity. *Foot & Ankle International*, 41(10), 1282-1285. Copyright Jodi Gootkin 2023

45

Pes Planus Procedures Considerations

- Immobilization and NWB post-op
- Progressive weight bearing in boot with ROM exercises
- Progressive weight bearing without boot
- Strengthening and proprioceptive exercise
- If flexor digitorum longus to posterior tibial tendon transfer is done, delayed PROM and strengthening.
- Weight loss

46 Copyright Jodi Gootkin 2023

46

Achilles Tendon Rupture Procedures

- Repair
- Reconstruction
- Combined procedures

I	partial ≤50%
II	complete < 3.0 cm gap
III	complete 3.0- 6.0 cm gap
IV	complete > 6.0 cm gap

47 Copyright Jodi Gootkin 2023

47

Achilles Tendon Repair

- Specific end-to-end suture technique utilized considers pull-out and gap resistance to facilitate healing.
- Calcaneal anchoring
- Augmentation techniques

48 Copyright Jodi Gootkin 2023

48

Achilles Tendon Reconstruction Tendon Transfer

- Flexor hallucis longus (FHL)
 - Potential push-off strength deficits
- Peroneus brevis
 - Subjective foot strength reduction
- Plantaris

Danna, N. R., & Brodsky, J. W. (2020). Diagnosis and operative treatment of peroneal tendon tears. *Foot & Ankle Orthopaedics*, 5(2).
Maffulli, N., et al. (2023). Local tendon transfers for chronic ruptures of the Achilles tendon: a systematic review. *Journal of Clinical Medicine*, 12(2), 707. Copyright Jodi Gootkin 2023

49

Achilles Tendon Reconstruction Autograft

- Open or minimally invasive procedures utilizing semitendinosus and/or gracilis.

Copyright Jodi Gootkin 2023

50

Achilles Tendinopathy Procedures

- Mid-portion
 - Debridement and tendon repair
 - > 50% tendon thickness removal requires reconstruction with flexor hallucis longus tendon
- Insertional
 - Debridement and osseous/soft tissue excision
 - > 50% insertion detachment requires calcaneal reinforcement
 - Gastrocnemius release

Copyright Jodi Gootkin 2023

51

Achilles Tendon Procedures Considerations

- Monitor incision/donor site and Thompson Test
- No consensus on protocols
- Initial immobilization NWB in plantarflexion
 - Progressive weight bearing with bracing
 - Heel gel cushion
- Avoid ROM beyond neutral in early rehab
- Begin heel raises bilaterally and concentric
- Delay stretching and eccentric exercise

Christensen, M., et al. (2020). Resistance exercises in early functional rehabilitation for achilles tendon ruptures are poorly described: A scoping review. *Journal of Orthopaedic & Sports Physical Therapy*, 50(12), 691-690.
Savona, A., et al. (2022). Current consensus for rehabilitation protocols of the surgically repaired acute mid-substance achilles rupture: A systematic review and recommendations from the 'GAIT' study group. *The Journal of Foot and Ankle Surgery*, 61(4), 855-861.
Gould, H. P., et al. (2021). Postoperative rehabilitation following Achilles tendon repair: a systematic review. *Sports Medicine and Arthroscopy Review*, 29(2), 130-145. Copyright Jodi Gootkin 2023

52

Achilles Tendon Procedures Outcomes

Diagnosis/Procedure	Outcome
Insertional achilles tendinopathy	Calcific vs. non-calcific similar outcomes Low overall complications
Debridement and calcaneal anchors	High return to activity rate
Acute achilles tendon tear	Low complication rate
Open end-to-end repair	Significant Achilles Tendon Rupture Score increase
Accelerated functional rehab	

Savona, A., et al. (2021). Insertional Achilles tendinopathy: analysis of 166 procedures and return to activity. *The Journal of Foot and Ankle Surgery*, 60(6), 1117-1123.
Lee, K. W., et al. (2022). Immediate Weightbearing and Ankle Motion Exercise After Acute Achilles Tendon Rupture Repair. *The Journal of Foot and Ankle Surgery*, 61(3), 604-608. Copyright Jodi Gootkin 2023

53

Anterior Ankle Impingement Arthroscopy

- Following trauma, fibrotic tissue and osteophytes form then become entrapped with ankle movement.
- Debridement allows recovery of motion.
- Immediate protected weightbearing and ROM/stretching/strengthening/proprioception.
- Monitor peroneal nerve.

Gianikas, et al. (2021). Outcomes after arthroscopic surgery for anterior impingement in the ankle joint in the general and athletic populations: Does sex play a role?. *The American Journal of Sports Medicine*, 49(10), 2834-2842. Copyright Jodi Gootkin 2023

54



Osteochondral Lesion of Talus (OLT)

- Talus subchondral bone and cartilage damage following traumatic ankle injury or repetitive microtrauma.
- Surgical management includes cartilage repair, regeneration and replacement techniques.

55

Copyright Jodi Gootkin 2023

55

OLT - Cartilage Regeneration Procedures

- Bone Marrow Stimulation (BMS) encourages talus revascularization.
- Autologous chondrocyte transplantation
 - Donor site cells are grown in vitro and implanted into the talar dome defect.
 - Monitor donor site

Small lesion
• BMS
• Fibrocartilage

Large defect
• Chondrocytes or graft
• Hyaline cartilage

Consider This

56

Krause, F., & Anwander, H. (2022). Osteochondral lesion of the talus: still a problem? EFORT open reviews, 7(6), 337-343.11

Copyright Jodi Gootkin 2023

56

OLT - Cartilage Replacement Procedures

- Osteochondral Autograft Transfer (OATs Procedure)
 - Monitor donor site
- Osteochondral Allograft Transplant
- Weight bearing delayed until radiographic evidence of bone healing.



57

Copyright Jodi Gootkin 2023

57

OLT Procedure Considerations

- Best technique for immature bone?
- Immediate weight bearing and early ROM with BMS appears to decrease pain scores.
- Monitor for anterior ankle impingement syndrome.

Pallamar, M., et al., (2022). Surgical treatment of atraumatic osteochondritis dissecans of the immature talus—Clinical results and prevalence of radiographic joint degeneration after a median follow-up of 72.5 months. Foot and Ankle Surgery, 28(5), 557-563.
Dankowicz, R. M., et al. (2021). Impact of early weightbearing after ankle arthroscopy and bone marrow stimulation for osteochondral lesions of the talus. Orthopaedic Journal of Sports Medicine, 9(9).
Viehöler, A. F., et al. (2021). Smoking is associated with anterior ankle impingement after isolated autologous matrix-induced chondrogenesis for osteochondral lesions of the talus. Cartilage, 13(1), 136(5)-137(2).

Copyright Jodi Gootkin 2023

58

Arthrodesis

- Indications
 - Pes planus with subtalar osteoarthritis
 - End-stage arthritis
 - Charcot arthropathy
 - Failed ORIF
 - Talus avascular necrosis
 - Congenital deformity
 - Bone tumors
 - Tarsal coalitions with pain/surrounding joint degeneration
 - Neurologic conditions with a propulsive gait

59

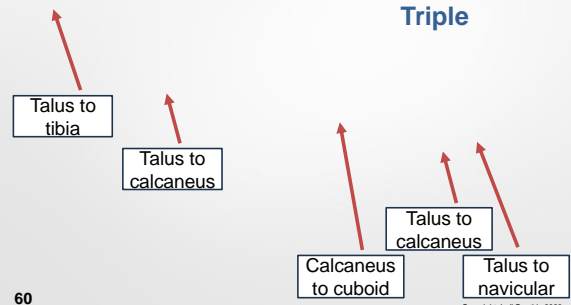
Copyright Jodi Gootkin 2023

59

Tibiotalar

Subtalar

Triple



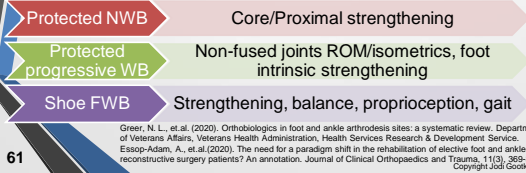
60

Copyright Jodi Gootkin 2023

60

Arthrodesis Considerations

- Orthobiologics may promote bone formation.
- Monitor wound healing
- No consensus on early mobilization
 - Glissan's principles – radiographic confirmation for weight bearing progression
- Nonunion and hardware failure risk
- Adjacent joint arthritis risk



61

Total Ankle Arthroplasty

- Indicated for management of advanced arthritis.
- Goal to relieve pain without limiting range of motion.
 - Decreased risk of adjacent joint arthritis.
- Manage gait symmetry, pain, and return to activity expectations.

62

Copyright Jodi Gootkin 2023

62

Total Ankle Replacement (TAR)

- Monitor wound healing
- If concurrent tendon transfers, strengthening and stretching restricted for approximately 3 months.
- No consensus on early mobilization



63

Arthrodesis (AA) vs. Total Ankle Arthroplasty (TAA) Arthritis Outcomes

Study type	Outcome
Prospective RCT	<ul style="list-style-type: none"> • Both cohorts - significant improvement on Ankle Osteoarthritis Scale and no significant improvement on SF-36 • AA Higher complication rate
Systematic review and meta-analysis	<ul style="list-style-type: none"> • Both cohorts – similar outcomes for pain, gait, satisfaction, and Ankle Osteoarthritis Scale • TAA – greater range of motion and more significant improvement in American Orthopedic Foot & Ankle Society score • TAA – higher complication and reoperation rate

64

Glazebrook, M., et al. (2021). Clinical outcome results of total ankle replacement and ankle arthrodesis: a pilot randomised controlled trial. Foot and Ankle Surgery, 27(3), 326-331. Shi, C. L., et al. (2020). Clinical outcomes of total ankle arthroplasty versus ankle arthrodesis for the treatment of end-stage ankle arthritis in the last decade: a systematic review and meta-analysis. The Journal of Foot and Ankle Surgery, 59(9), 1032-1039. Copyright Jodi Gootkin 2023

64

Ambulation Devices

- Knee scooter vs. hands free crutch

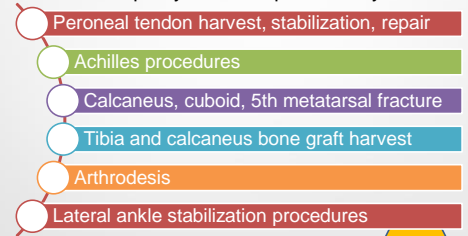
65

Copyright Jodi Gootkin 2023

65

Sural Neuropathy

- Sensation to posterolateral aspect of the distal third of the leg, the lateral foot, and the fifth toe.
- Differential diagnosis includes S1 radiculopathy, Achilles tendinopathy, and compartment syndrome.



Consider This

Copyright Jodi Gootkin 2023

66

Conclusion

- Technology advances facilitate innovative surgical techniques to restore arthrokinematics and muscle function of the foot and ankle following injury.
- Continued research is needed to develop best practices for post-surgical rehabilitation to achieve functional outcomes and minimize complications.

67

Copyright Jodi Gootkin 2023

67

1. What substance may be administered perioperatively to limit blood loss?

- A. Hyaluronic acid
- B. Platelet rich plasma
- C. Tranexamic acid
- D. Autologous matrix

68

Copyright Jodi Gootkin 2023

68

2. What characteristic of nitinol technology allows it to provide dynamic stability?

- A. Low bending threshold
- B. Shape memory
- C. Rigid construct
- D. Narrow bridge design

69

Copyright Jodi Gootkin 2023

69

3. Gastrocnemius recession is indicated to manage recalcitrant pain from what condition?

- A. Plantar fasciitis
- B. Ankle osteoarthritis
- C. Intra-articular ankle fracture
- D. Hallux valgus

70

Copyright Jodi Gootkin 2023

70

4. Which of the following is a method of fixation to manage syndesmotic instability?

- A. Osteotomy
- B. Intramedullary nail
- C. Suture Button
- D. Needle tendoscopy

71

Copyright Jodi Gootkin 2023

71

5. Which technique is considered the gold standard for patients with chronic ankle instability not responding to conservative management?

- A. Evans
- B. Gould augmentation
- C. Brostrom
- D. Thermal capsular shrinkage

72

Copyright Jodi Gootkin 2023

72

6. Retromalleolar deepening with repair of the superior retinaculum could be performed to manage what condition?

- A. Hallux rigidus
- B. Pes planus
- C. Achilles tendon rupture
- D. Peroneal tendon subluxation

73

Copyright Jodi Gootkin 2023

73

7. How does the medial displacement calcaneal osteotomy alleviate hindfoot eversion force?

- A. Shifts anterior tibialis moment arm
- B. Increases spring ligament forces
- C. Shifts achilles tendon moment arm
- D. Decreases fibular forces

74

Copyright Jodi Gootkin 2023

74

8. What is the goal of arthroscopy to manage anterior ankle impingement?

- A. Tighten the anterior joint capsule
- B. Remove osteophytes and fibrotic tissue
- C. Repair ligamentous laxity
- D. Implant bone matrix

75

Copyright Jodi Gootkin 2023

75

9. Bone marrow stimulation is a surgical option to manage what condition?

- A. High ankle sprain
- B. Achilles tendon rupture
- C. First metatarsophalangeal arthritis
- D. Osteochondral lesion of talus

76

Copyright Jodi Gootkin 2023

76

10. Altered sensation of the posterolateral aspect of the distal leg and lateral foot along the fifth metatarsal might indicate injury to what nerve?

- A. Sural
- B. Tibial
- C. Deep peroneal
- D. Saphenous

77

Copyright Jodi Gootkin 2023

77

Podiatric Surgical Procedures - Considerations, Application & Management

References

- Abar, B., Kwon, N., Allen, N. B., Lau, T., Johnson, L. G., Gall, K., & Adams, S. B. (2022). Outcomes of Surgical Reconstruction Using Custom 3D-Printed Porous Titanium Implants for Critical-Sized Bone Defects of the Foot and Ankle. *Foot & Ankle International*, 10711007221077113.
- Abdulwahab, D. M., Mutaesm, S. M., & Qader, W. F. A. (2022). Treatment of chronic plantar fasciitis: a comparative study between shockwave therapies and local corticosteroid injection. *Гений ортопедии*, 28(4), 503-506.
- Aicale, R., & Maffulli, N. (2020). Chronic lateral ankle instability: topical review. *Foot & Ankle International*, 41(12), 1571-1581.
- Aizawa, T., & Tsujino, J. (2022). Anterior compartment syndrome after achilles tendon repair: A rare case report. *Foot & Ankle Surgery: Techniques, Reports & Cases*, 2(1), 100148.
- Albaqami, M. S., & Alqarni, A. A. (2022). Efficacy of regional anesthesia using ankle block in ankle and foot surgeries: a systematic review. *Eur Rev Med Pharmacol Sci*, 26(2), 471-484.
- Al-Janabi, M. M., Apostolides, M., Southgate, C., & Dhinsa, B. S. (2023). Early mobilization following elective ankle lateral collateral ligament reconstruction in adults. *The Foot*, 101988.
- Altinkaynak, E. S. (2022). Hands-free Crutch Reduces the Muscle Atrophy Attributed to Non-weight Bearing Injuries. *iWALKFree*, Inc. Available at: <https://osf.io/qac95/download>
- Altmepfen, J. N., Colcuc, C., Balsler, C., Gramlich, Y., Klug, A., Neun, O., ... & Fischer, S. (2022). A 10-Year Follow-Up of Ankle Syndesmotic Injuries: Prospective Comparison of Knotless Suture-Button Fixation and Syndesmotic Screw Fixation. *Journal of Clinical Medicine*, 11(9), 2524.
- Andrews, N. A., Hess, M. C., Young, S., Halstrom, J., Fellows, K., Harrelson, W. M., ... & Shah, A. (2022). Prevalence and Risk Factors of Postoperative Falls Following Foot and Ankle Surgery. *Foot & Ankle International*, 10711007221082644.
- Arshad, Z., Aslam, A., Razzaq, M. A., & Bhatia, M. (2022). Gastrocnemius release in the management of chronic plantar fasciitis: a systematic review. *Foot & ankle international*, 43(4), 568-575.
- Attia, A. K., Mahmoud, K., ElSweify, K., Bariteau, J., & Labib, S. A. (2021). Donor site morbidity of calcaneal, distal tibial, and proximal tibial cancellous bone autografts in foot and ankle surgery. A systematic review and meta-analysis of 2296 bone grafts. *Foot and Ankle Surgery*.
- Atzmon, R., Eilig, D., Dubin, J., Vidra, M., Marom, O., Tavid, A., ... & Palmanovich, E. (2022). Comparison of Platelet-Rich Plasma Treatment and Partial Plantar Fasciotomy Surgery in Patients with Chronic Plantar Fasciitis: A Randomized, Prospective Study. *Journal of Clinical Medicine*, 11(23), 6986.
- Babol, J. and Stenberg, J. (2022). Peri-operative Nerve Injuries Post-Foot and Ankle Surgery. *Surgical Podiatry*. Available at: <https://podiatrym.com/pdf/2022/10/Babol1022Web.pdf>
- Barbier, O., Amouyel, T., de l'Escalopier, N., Cordier, G., Baudrier, N., Benoist, J., ... & SFA, F. A. S. (2021). Osteochondral lesion of the talus: What are we talking about?. *Orthopaedics & Traumatology: Surgery & Research*, 107(8), 103068.

Batista, J. P., Arrondo, G. M., Matías-Joannas, G., Cangiano, L. V., Baraousse, R., Casola, L., & Dalmau-Pastor, M. (2022). Peroneal nerve injuries during anterior ankle arthroscopy. *Journal of the Foot & Ankle*, 16(2), 126-131.

Beals, C. J., Wong, G. A., Dupont, K. M., & Safranski, D. L. (2023). Effect of Simulated Bone Resorption on the Biomechanical Performance of Intramedullary Devices for Foot and Ankle Arthrodesis. *The Journal of Foot and Ankle Surgery*, 62(1), 7-13.

BH, P. P., Diskina, D., Lin, H. M., Vulcano, E., & Lai, Y. H. (2021). Use of tranexamic acid does not influence perioperative outcomes in ambulatory foot and ankle surgery—a prospective triple blinded randomized controlled trial. *International Orthopaedics*, 45(9), 2277-2284.

Boushnak, M., Moussa, M. K., Jayankura, M., Gauthier, C., & Mirzoyan, H. (2022). Combined procedure for the treatment of complicated chronic ankle instability with associated complete rupture of peroneal tendons. *Foot & Ankle Surgery: Techniques, Reports & Cases*, 2(1), 100138.

Bradley, A. P., Roehl, A. S., McGrath, R., Smith, J., & Hackney, K. J. (2022). Popliteal Blood Flow With Lower-Extremity Injury Mobility Devices. *Foot & Ankle Orthopaedics*, 7(4), 24730114221142784.

Brumat, P., Kunšič, O., Novak, S., Slokar, U., Pšenica, J., Topolovec, M., ... & Trebše, R. (2022). The surgical treatment of osteoarthritis. *Life*, 12(7), 982.

Burnham, M., Wright, A., Kane IV, T. J., & Kikuchi, C. K. (2022). When do patients return to driving after outpatient foot and ankle surgery?. *Hawai'i Journal of Health & Social Welfare*, 81(3 Suppl 1), 13.

Camacho, L. D., Roward, Z. T., Deng, Y., & Latt, L. D. (2019). Surgical management of lateral ankle instability in athletes. *Journal of athletic training*, 54(6), 639-649.

Chen, J., Wu, S., Li, Y., Chen, Y., Liu, X., Qin, B., & Zhang, H. (2022). Simultaneous Total Ankle Replacement and Contralateral Ankle Arthrodesis for Bilateral Ankle Osteoarthritis: A Retrospective Study Focused on Clinical Outcomes and Cost-effectiveness. *Orthopaedic Surgery*, 14(8), 1808-1816.

Choi, S., Choi, Y., Baek, E., & Jo, S. (2020). Does repair of deltoid ligament contribute to restoring a mortise in SER type IV ankle fracture with syndesmotic diastasis?. *Archives of Orthopaedic and Trauma Surgery*, 1-7.

Chopra, S., Moerenhout, K., & Crevoisier, X. (2016). Subjective versus objective assessment in early clinical outcome of modified Lapidus procedure for hallux valgus deformity. *Clinical Biomechanics*, 32, 187-193.

Chrea, B., Day, J., Henry, J., Cody, E., HSS Orthopaedic Foot and Ankle Surgery Group, & Ellis, S. (2021). Influence of Complications and Revision Surgery on Fulfillment of Expectations in Foot and Ankle Surgery. *Foot & Ankle International*, 42(7), 859-866.

Christensen, M., et al.. (2020). Resistance exercises in early functional rehabilitation for achilles tendon ruptures are poorly described: A scoping review. *Journal of Orthopaedic & Sports Physical Therapy*, 50(12), 681-690.

Chuckpaiwong, B., Reingrittha, P., Harnroongroj, T., Mawhinney, C., & Tharmviboonsri, T. (2023). Sport and Exercise Activity After Isolated Ankle Arthrodesis for Advanced-Stage Ankle Osteoarthritis: A Single-Center Retrospective Analysis. *Foot & Ankle Orthopaedics*, 8(2), 24730114231177310.

Cody, E., Karnovsky, B. A., and et al. (2018). Hamstring autograft for foot and ankle applications. *Foot & Ankle International*, 39(2), 189-195

- Colasanti, C. A., Kaplan, D. J., Chen, J. S., Kanakamedala, A., Dankert, J. F., Hurley, E. T., ... & Kennedy, J. G. (2022). In-Office Needle Arthroscopy for Anterior Ankle Impingement. *Arthroscopy techniques*, 11(3), e327-e331.
- Colberg, R. E., Kenneth-Nwosa, K. O., Jurado Vélez, J. A., Slowik, J. S., & Fleisig, G. S. (2022). Clinical and Imaging Outcomes of Plantar Fasciotomy Using Microdebrider Coblation Wand. *Foot & Ankle Orthopaedics*, 7(2), 24730114221091797.
- Coppola, M., Sgadari, A., Marasco, D., Danti, C., Vitale, G., Smeraglia, F., ... & Bernasconi, A. (2022). Treatment Approaches for Plantar Fasciopathy in Elite Athletes: A Scoping Review of the Literature. *Orthopaedic Journal of Sports Medicine*, 10(11), 23259671221136496.
- Cornu, O., Manon, J., Tribak, K., & Putineanu, D. (2021). Traumatic injuries of the distal tibiofibular syndesmosis. *Orthopaedics & Traumatology: Surgery & Research*, 107(1), 102778.
- Cunningham, D. J., Paniagua, A., DeLaura, I., Zhang, G., Kim, B., Kim, J., ... & Gage, M. J. (2022). Regional Anesthesia Decreases Inpatient But Not Outpatient Opioid Demand in Ankle and Distal Tibia Fracture Surgery. *Foot & Ankle Specialist*.
- Dammerer, D., Braitto, M., Biedermann, R., Ban, M., Giesinger, J., Haid, C., ... & Kaufmann, G. (2016). Effect of surgical shoes on brake response time after first metatarsal osteotomy—a prospective cohort study. *Journal of Orthopaedic Surgery and Research*, 11, 1-6.
- Danilkowicz, R. M., Grimm, N. L., Zhang, G. X., Lefebvre, T. A., Lau, B., Adams, S. B., & Amendola, A. (2021). Impact of early weightbearing after ankle arthroscopy and bone marrow stimulation for osteochondral lesions of the talus. *Orthopaedic Journal of Sports Medicine*, 9(9).
- Davey, M. S., Davey, M. G., Hurley, E. T., & Kearns, S. R. (2022). Tourniquet Use During Open Reduction & Internal Fixation of Ankle Fractures—A Systematic Review & Meta-Analysis. *The Journal of Foot and Ankle Surgery*.
- deMeireles, A. J., Guzman, J. Z., Nordio, A., Chan, J., Okewunmi, J., & Vulcano, E. (2022). Complications After Percutaneous Osteotomies of the Calcaneus. *Foot & Ankle Orthopaedics*, 7(3), 24730114221119731.
- Demis, B. T., & Murat, Ü. Z. E. L. (2023). The Investigation of Anatomic and Orthopedic Properties of First Metatarsal Bone: Anatomy Of Os Metatarsale I. *International Journal of Current Medical and Biological Sciences*, 3(1), 3-12.
- Desouky, O., Elseby, A., & Ghalab, A. H. (2021). Removal of Syndesmotic Screw After Fixation in Ankle Fractures: A Systematic Review. *Cureus*, 13(6).
- DiLiberto, F. E., Aslan, D. H., Houck, J. R., Ho, B. S., Vora, A. M., & Haddad, S. L. (2020). Overall health and the influence of physical therapy on physical function following total ankle arthroplasty. *Foot & Ankle International*, 41(11), 1383-1390.
- Di Santo, P., Basciani, S., Papalia, G. F., Santini, S., Marineo, G., Papapietro, N., & Marinozzi, A. (2023). Return to Sport after Surgical Treatment for Dislocation of the Peroneal Tendon: A Systematic Review of the Current Literature. *Applied Sciences*, 13(13), 7685.
- Dillane, D., Ramadi, A., Nathanail, S., Dick, B. D., Bostick, G., Chan, K., ... & Pedersen, M. E. (2022). Elective surgery in ankle and foot disorders—best practices for management of pain: a guideline for clinicians. *Canadian Journal of Anesthesia/Journal canadien d'anesthésie*, 1-15.

Dilley, J. E., Everhart, J. S., & Klitzman, R. G. (2022). Hyaluronic acid as an adjunct to microfracture in the treatment of osteochondral lesions of the talus: a systematic review of randomized controlled trials. *BMC Musculoskeletal Disorders*, 23(1), 1-10.

Diniz, P., Sousa, D. A., Batista, J. P., Abdelatif, N., & Pereira, H. (2020). Diagnosis and treatment of anterior ankle impingement: state of the art. *Journal of ISAKOS*, 5(5), 295-303.

Ellington, J. K., Lewis Jr, J. S., Barcel, D. A., Vier, D. D., & Kaiser, P. (2022). Nitinol Compression Screws in Foot and Ankle Surgery. *Techniques in Foot & Ankle Surgery*, 21(3), 138-145.

Essop-Adam, A., Houchen-Wolloff, L., Vaishya, R., & Mangwani, J. (2020). The need for a paradigm shift in the rehabilitation of elective foot and ankle reconstructive surgery patients? An annotation. *Journal of Clinical Orthopaedics and Trauma*, 11(3), 369-374.

Ferreira, G. F., Costa, J. H. A., Domingues, G., Lima, J. P. B. C., Sanhudo, J. A. V., & Pereira Filho, M. V. (2022). Low Donor Site Morbidity Associated With Tricortical Calcaneal Bone Graft. *Foot & Ankle International*, 43(1), 49-54.

Fischer, S., Weber, S., Gramlich, Y., Blank, M., Buckup, J., Manegold, S., & Hoffmann, R. (2022). Electrothermal Denervation of Synovial and Capsular Tissue Does not Improve Postoperative Pain in Arthroscopic Debridement of Anterior Ankle Impingement—A Prospective Randomized Study. *Arthroscopy, sports medicine, and rehabilitation*, 4(2), e575-e583.

Fischer, S., Weber, S., Gramlich, Y., Blank, M., Buckup, J., Manegold, S., & Hoffmann, R. (2022). Electrothermal Denervation of Synovial and Capsular Tissue Does not Improve Postoperative Pain in Arthroscopic Debridement of Anterior Ankle Impingement—A Prospective Randomized Study. *Arthroscopy, sports medicine, and rehabilitation*, 4(2), e575-e583.

Fleischer, A., Patel, J., Yalla, S., Klein, E., Landry, K., & Weil Jr, L. (2022). Effects of Hallux Valgus Surgery on Balance and Gait in Middle Aged and Older Adults. *The Journal of Foot and Ankle Surgery*, 61(4), 798-801.

Frederick, R. M., Burnette, H., Joyce, M., Kumar, P., McGee, T., Chiu, C. Y., ... & Richardson, D. R. (2022). Efficacy of Postoperative Oral Antibiotics in Foot and Ankle Surgery. *Foot & Ankle International*, 43(9), 1204-1210.

Fuimaono Asafo, A., Chan, H., Lim, C. S., & Tomlinson, M. (2022). Patient-Reported and Radiologic Outcomes With the Lapidus Procedure. *Foot & Ankle Orthopaedics*, 7(2), 24730114221104825.

Gagne, O. J., Cheema, A., Abuhantash, M., Ree, R., Penner, M., Wing, K., ... & Veljkovic, A. (2021). Effect of dexamethasone in peripheral nerve blocks on recovery of nerve function. *Foot & Ankle International*, 42(1), 23-30.

Gangadharan, R., Roslee, C., Kelsall, N., & Taylor, H. (2021). Retrospective review of complications following long tourniquet time in foot and ankle surgery. *Journal of Clinical Orthopaedics and Trauma*, 16, 189-194.

Gbejuade, H., Squire, J., Dixit, A., Kaushik, V., & Mangwani, J. (2020). Ultrasound-guided regional anaesthesia in foot and ankle surgery. *Journal of Clinical Orthopaedics and Trauma*, 11(3), 417-421.

Genovese, N., Metrione, M., Bach, L., Lauritsen, K., & Lin, S. S. (2022). PRP in Orthopedics. In *Platelet Rich Plasma in Medicine* (pp. 25-43). Springer, Cham.

Ghetti, C. B., Mitchell, B. C., Shah, V. J., Wang, W., Huang, B., Kent, W. T., & Foran, I. M. (2022). An anatomic study of the sural nerve using 3-tesla MRI: a comparison to cadaveric data with surgical applications. *Foot & Ankle International*, 43(4), 540-550.

Glazebrook, M., Burgesson, B. N., Younger, A. S., & Daniels, T. R. (2021). Clinical outcome results of total ankle replacement and ankle arthrodesis: a pilot randomised controlled trial. *Foot and Ankle Surgery*, 27(3), 326-331.

Goldberg, A. J., Chowdhury, K., Bordea, E., Blackstone, J., Brooking, D., Deane, E. L., ... & Doré, C. J. (2023). Total ankle replacement versus ankle arthrodesis for patients aged 50-85 years with end-stage ankle osteoarthritis: the TARVA RCT. *Health Technology Assessment (Winchester, England)*, 27(5), 1.

Gong, X. F., Sun, N., Li, H., Li, Y., Lai, L. P., Li, W. J., ... & Wu, Y. (2022). Modified Chevron Osteotomy with Distal Soft Tissue Release for Treating Moderate to Severe Hallux Valgus Deformity: A Minimal Clinical Important Difference Values Study. *Orthopaedic Surgery*.

González-Martín, D., Herrera-Pérez, M., Ojeda-Jiménez, J., Rendón-Díaz, D., Valderrabano, V., & Pais-Brito, J. L. (2021). Neurological injuries after calcaneal osteotomies are underdiagnosed. *Journal of Clinical Medicine*, 10(14), 3139.

Greer, N. L., Yoon, P., Majeski, B., & Wilt, T. J. (2020). Orthobiologics in foot and ankle arthrodesis sites: a systematic review. Department of Veterans Affairs, Veterans Health Administration, Health Services Research & Development Service.

Gupta, A., Ortiz-Babilonia, C., Xu, A. L., Rogers, D., Vulcano, E., & Aiyer, A. A. (2022). The Statistical Fragility of Platelet-Rich Plasma as Treatment for Plantar Fasciitis: A Systematic Review and Simulated Fragility Analysis. *Foot & Ankle Orthopaedics*, 7(4), 24730114221144049.

Gupta, R., Pfennig, M., Gannon, J., Young, D., Gupta, M., Chaiyasate, S., ... & Chaiyasate, K. (2022). Utilization of the Pedicled and Free Fibula Flap for Ankle Arthrodesis. *Plastic and Reconstructive Surgery—Global Open*, 10(11), e4670.

Hackney, K. J., Bradley, A. P., Roehl, A. S., McGrath, R., & Smith, J. (2022). Energy Expenditure and Substrate Utilization with Hands-Free Crutches Compared to Conventional Lower-Extremity Injury Mobility Devices. *Foot & Ankle Orthopaedics*, 7(4), 24730114221139800.

Hermanns, C., Coda, R., Cheema, S., Vopat, M. L., Bechtold, M., Tarakemeh, A., ... & Vopat, B. G. (2020). Review of variability in rehabilitation protocols after lateral ankle ligament surgery. *Kansas journal of medicine*, 13, 152.

Hermus, J. P. S., van Kuijk, S. M. J., Spekenbrink-Spooren, A., Witlox, M. A., Poeze, M., van Rhijn, L. W., & Arts, J. J. C. (2022). Risk factors for total ankle arthroplasty failure: A Dutch Arthroplasty Register study. *Foot and Ankle Surgery*, 28(7), 883-886.

Hernigou, J., Labadens, A., Ghistelinck, B., Bui Quoc, E., Maes, R., Bhogal, H., ... & Safar, A. (2021). Vitamin C prevention of complex regional pain syndrome after foot and ankle surgery: a prospective randomized study of three hundred and twenty nine patients. *International Orthopaedics*, 45(9), 2453-2459.

Hoch, C., Pire, J., Scott, D. J., & Gross, C. E. (2022). The Influence of Pain and Resiliency on Foot and Ankle Surgery Outcomes. *Foot & Ankle Orthopaedics*, 7(2), 24730114221108137.

Hurley, E. T., Stewart, S. K., Kennedy, J. G., Strauss, E. J., Calder, J., & Ramasamy, A. (2021). Current management strategies for osteochondral lesions of the talus. *The Bone & Joint Journal*, 103(2), 207-212.

Hwang, I. M., Del Sol, S. R., Jenkins, S. M., Bryant, S. A., Gardner, B. B., McGahan, P., & Chen, J. (2022). Open Peroneal Tendon Stabilization With Fibular Groove Deepening. *Arthroscopy techniques*, 11(3), e347-e352.

Ito, H., Nishida, K., Kojima, T., Matsushita, I., Kojima, M., Hirata, S., ... & Harigai, M. (2023). Non-drug and surgical treatment algorithm and recommendations for the 2020 update of the Japan College of Rheumatology clinical practice guidelines for the management of rheumatoid arthritis—secondary publication. *Modern Rheumatology*, 33(1), 36-45.

Iturregui, J. M., Moses, A. M., Shi, G. G., & Haupt, E. T. (2023). Contemporary Review: Autograft Bone Use in Foot and Ankle Surgery. *Foot & Ankle Orthopaedics*, 8(1), 24730114231153153.

Jackson, L. J., Serhal, M., Omar, I. M., Garg, A., Michalek, J., & Serhal, A. (2023). Sural nerve: imaging anatomy and pathology. *The British Journal of Radiology*, 96(1141), 20220336.

Johns, W. L., Walley, K. C., Jackson III, B., & Gonzalez, T. A. (2021). Tranexamic Acid in Foot and Ankle Surgery: A Topical Review and Value Analysis. *Foot & Ankle Specialist*, 1938640020983639.

Kanakamedala, A., Chen, J. S., Kaplan, D. J., Colasanti, C. A., Dankert, J. F., Hurley, E. T., ... & Kennedy, J. G. (2022). In-Office Needle Tendoscopy of the Peroneal Tendons. *Arthroscopy techniques*, 11(3), e365-e371.

Karaytug, K., Bayram, S., Ekinci, M., Hürmeydan, Ö. M., & Batibay, S. G. (2022). Comparison of the Isolated Plantar Fascia Release Versus Plantar Fascia Release Combined With Calcaneal Decompression in Management of the Patients With Resistant Heel Pain. *The Journal of Foot and Ankle Surgery*, 61(3), 459-463.

Kaya, M., Karahan, N., Kurdal, D. P., Çiçek, E. D., Yilmaz, B., & Keskinöz, E. N. (2022). Can Hamstring Tendons Be Used as Autografts in Peroneal Tendon Reconstruction? A Cadaveric Study. *Tekirdağ Namık Kemal University Faculty of Medicine / Namık Kemal Medical Journal*, ;10(2):188-192

Khojaly, R., Rowan, F. E., Hassan, M., Hanna, S., Cleary, M., & Niocail, R. M. (2021, November). Weight-bearing allowed following internal fixation of ankle fractures: a systematic literature review and meta-analysis. In *Orthopaedic Proceedings* (Vol. 103, No. SUPP_13, pp. 64-64). The British Editorial Society of Bone & Joint Surgery.

Kim, KW., Soo S., Jin, Young Choi, J. (2022). Peroneal Tendon Reconstruction Using Tibialis Posterior Allograft for Simultaneous Irreparable Peroneus Longus and Brevis Tendon Complete Rupture: A Case Report. *Journal of Korean Foot and Ankle Society*, 26(2), 103-106.

Kim, Y. S., Kim, T. Y., & Koh, Y. G. (2021). Demographic Predictors of Concomitant Osteochondral Lesion of the Talus in Patients With Chronic Lateral Ankle Instability. *Foot & Ankle Orthopaedics*, 6(2), 24730114211013344.

King, M. A., Vesely, B. D., & Scott, A. T. (2022). Early outcomes with the vantage total ankle prosthesis. *Foot & Ankle Surgery: Techniques, Reports & Cases*, 2(1), 100121.

Kisana, H., Hui, C. H., Deeyor, S., Martin, J. R., Stecher, C., & Hustedt, J. W. (2022). Development of a Risk Stratification Scoring System to Predict General Surgical Complications for Patients Undergoing Foot and Ankle Surgery. *Orthopedics*, 45(3), 139-144.

Klepacki, K., Kowal, I., Konieczny, G., Tomczyk, Ł., Miękiśiak, G., & Morasiewicz, P. (2022). Radiographic Assessment of Tibiofibular Syndesmosis Injury with Different Durations and Types of Fixation. *Journal of Clinical Medicine*, 11(21), 6331.

Körner, D., Gonser, C. E., Döbele, S., Konrads, C., Springer, F., & Keller, G. (2021). Re-operation rate after surgical treatment of osteochondral lesions of the talus in paediatric and adolescent patients. *Journal of Orthopaedic Surgery and Research*, 16(1), 1-9.

- Krause, F., & Anwander, H. (2022). Osteochondral lesion of the talus: still a problem?. *EFORT open reviews*, 7(6), 337-343.
- Kumar, G., Jose, D. P., Simon, R., Ravi, S., & Punnoose, D. J. (2022). Repair of Peroneus Brevis Tear with Autologous Gracilis: A. *Journal of Foot and Ankle Surgery (Asia Pacific)*, 9(1), 26.
- Lee, K. W., Bae, J. Y., Ho, B. C., Kim, J. H., & Seo, D. K. (2022). Immediate Weightbearing and Ankle Motion Exercise After Acute Achilles Tendon Rupture Repair. *The Journal of Foot and Ankle Surgery*, 61(3), 604-608.
- Lee, S. B., Kwon, J. W., & Yun, S. H. (2022). Effects of Extracorporeal Shock Wave Therapy on Ankle Function, Range of Motion, and Dynamic Balance in Patients with Chronic Ankle Instability. *The Journal of Korean Physical Therapy*, 34(3), 91-97.
- Lee, S. J., Choi, Y., Choi, S., & Lee, H. (2022). Early Return to Daily Life through Immediate Weight-Bearing after Lateral Malleolar Fracture Surgery. *International Journal of Environmental Research and Public Health*, 19(10), 6052.
- Lei, T., Qian, H., Lei, P., & Hu, Y. (2021). Lateral augmentation reconstruction system versus modified Brostrom-Gould procedure: a meta-analysis of RCTs. *Foot and Ankle Surgery*, 27(3), 263-270.
- Liang, H., Wang, J., Yang, Y., Niu, T., Du, Z., Zang, J., ... & Guo, W. (2022). Reconstruction With a 3D-Printed Megaprosthesis With Ankle Arthrodesis After Distal Tibial Tumor Resection. *Foot & Ankle International*, 43(11), 1450-1459.
- Liew, S. K., Saw, A., & Chua, Y. P. (2022). Foot Arch Changes after Endoscopic Plantar Fascia Release for Recalcitrant Plantar Fasciitis. *Malaysian Orthopaedic Journal*, 16(2), 78.
- Lightsey, H. M., Noback, P. C., Caldwell, J. M. E., Trofa, D. P., Greisberg, J. K., & Vosseller, J. T. (2019). Online physical therapy protocol quality, variability, and availability in Achilles tendon repair. *Foot & Ankle Specialist*, 12(1), 16-24.
- Loder, B. G., & Abicht, B. P. (2022). Percutaneous Chevron Akin (PECA) for surgical correction of hallux valgus deformity. *Foot & Ankle Surgery: Techniques, Reports & Cases*, 2(1), 100136.
- Lu, V., Tennyson, M., Zhou, A., Patel, R., Fortune, M. D., Thahir, A., & Krkovic, M. (2022). Retrograde tibiototalocalcaneal nailing for the treatment of acute ankle fractures in the elderly: a systematic review and meta-analysis. *EFORT Open Reviews*, 7(9), 628-643.
- Luthfi, A. P. W. Y., Nakasa, T., Ikuta, Y., Sumii, J., Nekomoto, A., Kawabata, S., & Adachi, N. (2023). Risk Factors for the Recurrence of Instability After Lateral Ankle Ligament Repair. *Foot & Ankle International*, 10711007231171080.
- MacRae, C. S., Roche, A. J., Sinnett, T. J., & O'Connell, N. E. (2022). What is the evidence for efficacy, effectiveness and safety of surgical interventions for plantar fasciopathy? A systematic review. *PloS one*, 17(5), e0268512.
- Maffulli, N., Ziello, S., Maisto, G., Migliorini, F., & Oliva, F. (2023). Local tendon transfers for chronic ruptures of the Achilles tendon: a systematic review. *Journal of Clinical Medicine*, 12(2), 707.
- Mani, G., Porter, D., Grove, K., Collins, S., Ornberg, A., & Shulfer, R. (2022). Surface finishing of Nitinol for implantable medical devices: A review. *Journal of Biomedical Materials Research Part B: Applied Biomaterials*, 110(12), 2763-2778.
- Martinelli, N., Bianchi, A., Prandoni, L., Maiorano, E., & Sansone, V. (2021). Quality of Life in young adults after flatfoot surgery: A case-control study. *Journal of Clinical Medicine*, 10(3), 451.

Mateen, S., Gandhi, V., Meyr, A. J., Kwaadu, K. Y., & Sethi, A. (2021). Retrospective chart review of perioperative pain management of patients having surgery for closed ankle fractures using peripheral nerve blocks at a level one trauma center. *Pain Reports*, 6(1).

McCormack, D. J., Solan, M., Aziz, S., Faroug, R., Kirmani, S., Wright, G., & Mangwani, J. (2022). Role of the posterior deep deltoid ligament in ankle fracture stability: A biomechanical cadaver study. *World Journal of Orthopedics*, 13(11), 969-977.

Medda, S., Al'Khafaji, I. M., & Scott, A. T. (2017). Ankle arthroscopy with microfracture for osteochondral defects of the talus. *Arthroscopy Techniques*, 6(1), e167-e174.

Meekaew, P., Paholpak, P., Wisanuyotin, T., Sirichativapee, W., Sirichativapee, W., Kosuwon, W., & Kasai, Y. (2022). Biomechanics comparison between endobutton fixation and syndesmotic screw fixation for syndesmotic injury ankle fracture; a finite element analysis and cadaveric validation study. *Journal of Orthopaedics*, 34, 207-214.

Mercer, N. P., Gianakos, A. L., Mercurio, A. M., & Kennedy, J. G. (2021). Clinical outcomes of Peroneal tendon tears: a systematic review. *The Journal of Foot and Ankle Surgery*, 60(5), 1008-1013.

Mercer, N. P., Azam, M. T., Davalos, N., Kaplan, D. J., Colasanti, C. A., Chen, J. S., ... & Kennedy, J. G. (2022). Anterior Talofibular Ligament Augmentation With Internal Brace in the Office Setting. *Arthroscopy techniques*, 11(4), e545-e550.

Mirando, M., Conti, C., Zeni, F., Pedicini, F., Nardone, A., & Pavese, C. (2022). Gait Alterations in Adults after Ankle Fracture: A Systematic Review. *Diagnostics*, 12(1), 199.

Mohammed, H. N., Hassan, W. M., & Hassan, R. T. (2022). Distribution of patients with resistant plantar fasciitis and their response to percutaneous partial plantar fascia release under tibial nerve block. *Journal of Duhok University*, 25(1), 74-80.

Moniz, S., Sobhi, S., Ledowski, T., & Blythe, M. (2021). Compartment Syndrome of The Foot Following Ankle Open Reduction and Internal Fixation A Case Report. *Clin Res Foot Ankle*, 9(326), 2.

Murawski, C. D., Jamal, M. S., Hurley, E. T., Buda, R., Hunt, K., McCollum, G., ... & Hogan, M. V. (2022). Terminology for Osteochondral Lesions of the Ankle Proceedings of the International Consensus Meeting on Cartilage Repair of the Ankle. *Journal of ISAKOS*.

Nakagawa, H., Ashkani-Esfahani, S., Waryasz, G. R., Panero, A., & Sussman, W. I. (2022). Application of Amniotic Membrane Allograft in the Treatment of Foot and Ankle Pathologies: A Review of the Basic Science and Clinical Evidence. *Journal of Foot and Ankle Surgery (Asia Pacific)*, 10(1), 209-215.

Nishimura, A., Nakazora, S., Senga, Y., Fukuda, A., Kato, K., & Sudo, A. (2022). Knotless Tendoscopic Peroneal Retinaculum Repair Technique for Recurrent Peroneal Tendon Dislocation. *Arthroscopy Techniques*, 11(8), e1395-e1401.

Nordin, J. S., Olsson, O., & Lunsjö, K. (2019). The gracilis tendon autograft is a safe choice for orthopedic reconstructive procedures: a consecutive case series studying the effects of tendon harvesting. *BMC musculoskeletal disorders*, 20(1), 1-6.

Okçu, M., Tuncay, F., Koçak, F. A., Erden, Y., Ayhan, M. Y., & Kaya, S. S. (2023). Do the presence, size, and shape of plantar calcaneal spurs have any significance in terms of pain and treatment outcomes in patients with plantar fasciitis?. *Turkish Journal of Medical Sciences*, 53(1), 413-419.

Olewnik, Ł., Zielinska, N., Ruzik, K., Podgórski, M., Paulsen, F., Diogo, R., & Polguy, M. (2022). Morphological variability of the fibularis longus tendon in human fetuses. *Annals of Anatomy-Anatomischer Anzeiger*, 239, 151838.

Osbeck, I., Cöster, M., Montgomery, F., & Atroshi, I. (2023). Surgically treated adult acquired flatfoot deformity: Register-based study of patient characteristics, health-related quality of life and type of surgery according to severity. *Foot and Ankle Surgery*, 29(4), 367-372.

Pallamar, M., Eder, T., Ganger, R., & Farr, S. (2022). Surgical treatment of atraumatic osteochondrosis dissecans of the immature talus—Clinical results and prevalence of radiographic joint degeneration after a median follow-up of 72.5 months. *Foot and Ankle Surgery*, 28(5), 557-563.

Park, Y. U., & Kim, H. N. (2020). Use of External Fixators as a 3-Dimensional Navigation Drill Guide for Arthroscopic Ankle Arthrodesis. *BioMed Research International*, 2020.

Pierce Ebaugh, M., Alford, T., Kutzarov, K., Davis, E., Greaser, M., & McGarvey, W. C. (2022). Patient-Reported Outcomes of Primary Total Ankle Arthroplasty in Patients Aged < 50 Years. *Foot & Ankle Orthopaedics*, 7(1), 24730114221082601.

Pitarini, A., Anastasia, M., Kennedy, D., Sumargono, E., & Kholinne, E. (2022). The Surgical Procedure in Managing Peroneal Tendon Injury: A Case Series. *Orthopedic Research and Reviews*, 255-262.

Polichetti, C., Borruto, M. I., Lauriero, F., Caravelli, S., Mosca, M., Maccauro, G., ... & Perisano, C. (2023). Adult Acquired Flatfoot Deformity: A Narrative Review about Imaging Findings. *Diagnostics*, 13(2), 225.

Primadhi, R. A., Gunawan, H., Rachmayati, S., & Rasyid, H. N. (2022). Autologous osteophyte grafting for ankle arthrodesis. *SICOT-J*, 8.

Quan, T., Malyavko, A., Ifarraguerri, A. M., Kim, Y., Mcdaniel, L., Manzi, J. E., ... & Tabaie, S. (2022). Evaluating the Association of Anesthesia Type With Postoperative Complications in Patients Undergoing Ankle Fracture Repair. *The Journal of Foot and Ankle Surgery*.

Rak Choi, Y., Soo Kim, B., Kim, Y. M., Park, J. Y., Cho, J. H., Cho, Y. T., & Nyun Kim, H. (2021). Internal fixation of osteochondral lesion of the talus involving a large bone fragment. *The American Journal of Sports Medicine*, 49(4), 1031-1039.

Ramaskandhan, J., Kakwani, R., Kometa, S., Hewart, P., Rawlings, D., Chockalingam, N., & Siddique, M. (2023). Randomized Controlled Trial Comparing Early Mobilization vs Six Weeks of Immobilization in a Walking Cast Following Total Ankle Replacement. *The Journal of Foot and Ankle Surgery*, 62(4).

Randsborg, P. H., Jiang, H., Mao, J., et.al. (2022). Two-Year Revision Rates in Total Ankle Replacement Versus Ankle Arthrodesis: A Population-Based Propensity-Score-Matched Comparison from New York State and California. *JBJS Open Access*, 7(2), e21.

Ratnasamy, P. P., Gouzoulis, M. J., Kammien, A. J., Oh, I., & Grauer, J. N. (2022). Home and Outpatient Physical Therapy Utilization Following Total Ankle Replacement. *Foot & Ankle Orthopaedics*, 7(4).

Ray, J. J., Friedmann, A. J., Hanselman, A. E., Vaida, J., Dayton, P. D., Hatch, D. J., ... & Santrock, R. D. (2019). Hallux valgus. *Foot & Ankle Orthopaedics*, 4(2).

- Reilly, M. E., Conti, M. S., Day, J., MacMahon, A., Chrea, B., Caolo, K. C., ... & Ellis, S. J. (2021). Modified Lapidus vs Scarf Osteotomy Outcomes for Treatment of Hallux Valgus Deformity. *Foot & Ankle International*, 42(11), 1454-1462.
- Reissig, L., Lang, C., Schuh, C., Weninger, W., & Kaipel, M. (2022). Effects and risks of performing a single incision endoscopic plantar fasciotomy An anatomical study. *Foot & Ankle Surgery*, 28(5), 663-666.
- Rhyu, H. S., Hong, S. Y., & Rhi, S. Y. (2023). Effects of accelerated rehabilitation exercise after mbo on ankle function and strength in ankle instability. *Revista Brasileira de Medicina do Esporte*, 29.
- Rikken, Q. G., Dahmen, J., Altink, J. N., Canata, G. L., D'Hooghe, P., & Kerkhoffs, G. M. (2022). Osteochondral Lesions of the Ankle: An Evidence-Based Approach for Track and Field Athletes. In *Management of Track and Field Injuries* (pp. 273-281). Springer, Cham.
- Robertson, C., Wilson, V., Meek, R. D., & Carter, R. (2022). Extended Tourniquet Times and the Impact on Wound Healing in Foot Surgery. *Clinical Medicine & Research*, 20(3), 141-146.
- Robinson, D. M., Tan, C. O., & Tenforde, A. S. (2022). Functional gains using radial and combined shockwave therapy in the management of achilles tendinopathy. *The Journal of Foot and Ankle Surgery*, 61(1), 99-103.
- Rogero, R. G., Illical, E. M., Corr, D. O., Raikin, S. M., Krieg, J. C., & Tsai, J. (2021). Management of Ankle Fractures With Syndesmotic Disruption: A Survey of Orthopaedic Surgeons. *Cureus*, 13(7).
- Rupp, M. C., Degenhardt, H., Winkler, P. W., Hinz, M., Ehmann, Y. J., Imhoff, A. B., ... & Themessl, A. (2022). High return to sports and return to work rates after anatomic lateral ankle ligament reconstruction with tendon autograft for isolated chronic lateral ankle instability. *Knee Surgery, Sports Traumatology, Arthroscopy*, 1-9.
- Sabaghzadeh, A., Mirzaee, F., Rad, H. S., Bahramian, F., Alidousti, A., & Aslani, H. (2020). Osteochondral autograft transfer (mosaicplasty) for treatment of patients with osteochondral lesions of talus. *Chinese Journal of Traumatology*, 23(01), 60-62.
- Salameh, M., Attia, A. K., El Khatib, S., Hantouly, A., Hsu, R., & Blankenhorn, B. (2022). Tranexamic Acid Utilization in Foot and Ankle Surgery: A Meta-analysis. *Foot & Ankle International*, 43(10), 1370-1378.
- Salameh, M., Hantouly, A. T., Rayyan, A., Dabbas, J., Toubasi, A. A., Hartnett, D. A., & Blankenhorn, B. (2022). Return to Play After Isolated Syndesmotic Ligamentous Injury in Athletes: A Systematic Review and Meta-analysis. *Foot & Ankle Orthopaedics*, 7(2), 24730114221096482.
- Salas-Gomez, D., Fernandez-Gorgojo, M., Sanchez-Juan, P., Bercero, E. L., Perez-Núñez, M. I., & Barbado, D. (2020). Quantifying balance deficit in people with ankle fracture six months after surgical intervention through the Y-Balance test. *Gait & Posture*.
- Samineni, A. V., Seaver, T., Sing, D. C., Salavati, S., & Tornetta III, P. (2022). Peripheral nerve blocks associated with shorter length of stay without increasing readmission rate for ankle open reduction internal fixation in the outpatient setting: a propensity-matched analysis. *The Journal of Foot and Ankle Surgery*, 61(6), 1165-1169.
- Sanchez, T., Sankey, T., Donley, C., Schick, S., Underwood, M., Brannigan, M., ... & Shah, A. (2023). Factors Associated With Poor Patient-Reported Outcomes in Isolated Gastrocnemius Recession for Heel Pain. *Foot & Ankle Orthopaedics*, 8(2), 24730114231165760.

Saraiva, D., Knupp, M., Rodrigues, A. S., Tulha, J., Gomes, T. M., Oliva, X. M., & Diaz, T. (2023). Outcomes of Combined Posterior Tibial Tendon Tendoscopy and Medializing Calcaneal Osteotomy for Stage IA Progressive Collapsing Foot Deformity. *Foot & Ankle International*, 10711007231167364.

Saxena, A., Maffulli, N., Jin, A., Isa, E., Arthur, W. P., & Wahl, A. (2021). Insertional Achilles Tendinopathy: Analysis of 166 Procedures and Return to Activity. *The Journal of Foot and Ankle Surgery*, 60(6), 1117-1123.

Saxena, A., Via, A. G., Silbernagel, K. G., Walther, M., Anderson, R., Gerdesmeyer, L., & Maffulli, N. (2022). Current consensus for rehabilitation protocols of the surgically repaired acute mid-substance achilles rupture: A systematic review and recommendations from the "Gait" study group. *The Journal of Foot and Ankle Surgery*, 61(4), 855-861.

Schafer, K. A., Baldini, T., Hamati, M., Backus, J. D., Hunt, K. J., & McCormick, J. J. (2022). Two Orthogonal Nitinol Staples and Combined Nitinol Staple-Screw Constructs for a First Metatarsophalangeal Joint Arthrodesis: A Biomechanical Cadaver Study. *Foot & Ankle International*, 43(11), 1493-1500.

Schlickewei, C., Neumann, J. A., Yazar-Schlickewei, S., Riepenhof, H., Valderrabano, V., Frosch, K. H., & Barg, A. (2022). Does Demineralized Bone Matrix Affect the Nonunion Rate in Arthroscopic Ankle Arthrodesis?. *Journal of Clinical Medicine*, 11(13), 3893.

Schon, C. L., de Cesar Netto, C., Day, J., Deland, J. T., Hintermann, B., Johnson, J. E., ... & Ellis, S. J. (2020). Consensus for the indication of a medializing displacement calcaneal osteotomy in the treatment of progressive collapsing foot deformity. *Foot & Ankle International*, 41(10), 1282-1285.

Schubert, J., Lambers, K. T., Kimber, C., Denk, K., Cho, M., Doornberg, J. N., & Jaarsma, R. L. (2020). Effect on overall health status with weightbearing at 2 weeks vs 6 weeks after open reduction and internal fixation of ankle fractures. *Foot & ankle international*, 41(6), 658-665.

Shaw, D. B., & Carreira, D. S. (2022). The Impacts of Anxiety and Depression on Outcomes in Foot and Ankle Surgery. *Foot & Ankle International*, 10711007221132277.

Shih, C. L., Chen, S. J., & Huang, P. J. (2020). Clinical outcomes of total ankle arthroplasty versus ankle arthrodesis for the treatment of end-stage ankle arthritis in the last decade: a systematic review and meta-analysis. *The Journal of Foot and Ankle Surgery*, 59(5), 1032-1039.

Slater, G., & Slater, T. (2022). Current Concepts Review: Orthotics in Post-operative Foot and Ankle Surgery. *J Regen Biol Med*, 4(1), 1-4.

Smeeing, D. P. J., Houwert, R. M., Briet, J. P., Groenwold, R. H. H., Lansink, K. W. W., Leenen, L. P. H., ... & Hietbrink, F. (2020). Weight-bearing or non-weight-bearing after surgical treatment of ankle fractures: a multicenter randomized controlled trial. *European Journal of Trauma and Emergency Surgery*, 46(1), 121-130.

Soltanolkotabi, M., Mallory, C., Allen, H., Chan, B. Y., Mills, M. K., & Leake, R. L. (2022). Postoperative Findings of Common Foot and Ankle Surgeries: An Imaging Review. *Diagnostics*, 12(5), 1090.

Song, J. H., Kang, C., Kim, N. S., Yi, J. W., Lee, G. S., Jang, M. G., & Kim, T. H. (2021). Evaluation of the uninjured anterior talofibular ligament by ultrasound for assessing generalized joint hypermobility. *Foot and Ankle Surgery*, 27(3), 256-262.

Song, Y., Li, H., Sun, C., Zhang, J., Gui, J., Guo, Q., ... & Chen, S. (2019). Clinical guidelines for the surgical management of chronic lateral ankle instability: a consensus reached by systematic review of the available data. *Orthopaedic Journal of Sports Medicine*, 7(9), 2325967119873852.

- Spennacchio, P., Seil, R., Mouton, C., Scheidt, S., & Cucchi, D. (2022). Anatomic reconstruction of lateral ankle ligaments: is there an optimal graft option?. *Knee Surgery, Sports Traumatology, Arthroscopy*, 1-11.
- Stauffer, T. P., Kim, B. I., Grant, C., Adams, S. B., & Anastasio, A. T. (2023). Robotic Technology in Foot and Ankle Surgery: A Comprehensive Review. *Sensors*, 23(2), 686.
- Su, T., Zhu, Y. C., Du, M. Z., Jiang, Y. F., Guo, Q. W., Hu, Y. L., ... & Jiang, D. (2022). Anatomic reconstruction using the autologous gracilis tendon achieved less sprain recurrence than the Broström-Gould procedure but delayed recovery in chronic lateral ankle instability. *Knee Surgery, Sports Traumatology, Arthroscopy*, 1-8.
- Takao, M., Iwashita, K., Jujo, Y., Katakura, M., & Shimozone, Y. (2022). Heel Spurs and Plantar Fasciitis in Runners. In *Management of Track and Field Injuries* (pp. 283-293). Springer, Cham.
- Tay, K. S., Sangoi, D., Malhotra, K., Welck, M. J., Cullen, N., & Patel, S. (2022). Plain Radiographs are Insufficient for Evaluation of First Metatarsal Pronation in Patients Undergoing Surgery for Hallux Valgus. *Foot & Ankle Orthopaedics*, 7(4), 2473011421S00968.
- Tao, H., Zhang, Y., Hu, Y., Li, Q., Hua, Y., Lu, R., ... & Chen, S. (2022). Cartilage matrix changes in hindfoot joints in chronic ankle instability patients after anatomic repair using T2-mapping: Initial experience with 3-year follow-up. *Journal of Magnetic Resonance Imaging*, 55(1), 234-243.
- Tourné, Y., Molinier, F., Andrieu, M., Porta, J., & Barbier, G. (2019). Diagnosis and treatment of tibiofibular syndesmosis lesions. *Orthopaedics & Traumatology: Surgery & Research*, 105(8), S275-S286.
- Trache, T., Camenzind, R. S., Bachmann, E., Viehöfer, A., Jud, L., Wirth, S., & Imhoff, F. B. (2022). A Biomechanical Analysis of Peroneus Brevis Split Lesions, Repair, and Partial Resection. *Foot & Ankle International*, 43(5), 710-716.
- Tucker, W. A., Barnds, B. L., Morris, B. L., Tarakemeh, A., Mullen, S., Schroepel, J. P., & Vopat, B. G. (2020). Nationwide analysis of total ankle replacement and ankle arthrodesis in medicare patients: trends, complications, and cost. *Foot & Ankle Specialist*, 1938640020950181.
- U.S. DHHS, FDA, Center for Devices and Radiological Health. (2021). Technical Considerations for Non-Clinical Assessment of Medical Devices Containing Nitinol - Guidance for Industry and Food and Drug Administration Staff. Available at: <https://www.fda.gov/media/123272/download>
- U.S. FDA Center for Devices and Radiological Health. (2022). Medical device material performance study – Nitinol safety profile. Available at: <https://www.fda.gov/media/158490/download>
- van Dijk, P. A., França, G., Dahmen, J., Kerkhoffs, G. M., d'Hooghe, P., & Karlsson, J. (2022). Achilles Tendon, Calf, and Peroneal Tendon Injuries. In *Management of Track and Field Injuries* (pp. 235-246). Springer, Cham.
- van Dijk, P. A., Miller, D., Calder, J., DiGiovanni, C. W., Kennedy, J. G., Kerkhoffs, G. M., ... & van Dijk, C. N. (2018). The ESSKA-AFAS international consensus statement on peroneal tendon pathologies. *Knee Surgery, Sports Traumatology, Arthroscopy*, 26, 3096-3107.
- van Halsema, M. S., Boers, R. A., & Leferink, V. J. (2022). An overview on the treatment and outcome factors of ankle fractures in elderly men and women aged 80 and over: a systematic review. *Archives of Orthopaedic and Trauma Surgery*, 142(11), 3311-3325.

- Ventura, A., Borgo, E., Terzaghi, C., Macchi, V., & Legnani, C. (2021). A four-step approach improves long-term functional outcomes in patients suffering from chronic ankle instability: a retrospective study with a follow-up of 7–16 years. *Knee Surgery, Sports Traumatology, Arthroscopy*, 29(5), 1612-1616.
- Vesely, B. D., Bonvillian, J. P., King, M. A., Kim, S. T., Gangopadhyay, P., & Blazek, C. D. (2022). Opioid Prescribing Patterns of Foot and Ankle Surgeons: Single State Review. *The Journal of Foot and Ankle Surgery*, 61(5), 1071-1075.
- Viehöfer, A. F., Casari, F., Waibel, F. W., Beeler, S., Imhoff, F. B., Wirth, S. H., & Ackermann, J. (2021). Smoking is associated with anterior ankle impingement after isolated autologous matrix-induced chondrogenesis for osteochondral lesions of the talus. *Cartilage*, 13(1_suppl), 1366S-1372S.
- Vier, D., & Irwin, T. A. (2022). Open ankle arthrodesis for deformity correction. *Foot and Ankle Clinics*, 27(1), 199-216.
- Wang, X., Zhang, D., Zhang, F., Jin, L., Shi, D., & Hou, Z. (2022). Effect analysis of iliac bone autografting for Hepple V osteochondral lesions of the talus. *Journal of Orthopaedic Surgery and Research*, 17(1), 1-10.
- Weiss, C., Vogels, S., Wee, L., Janssen, L., de Bie, R. A., & Scheltinga, M. R. (2022). Two-Compartment or Four-Compartment Fasciotomy for Lower Leg Chronic Exertional Compartment Syndrome: A Systematic Review. *The Journal of Foot and Ankle Surgery*.
- Williams, S., Ligas, C., Doyle, M. D., Todd, N. W., Ishibashi, M. A., & Chen, S. S. (2022). Early Weightbearing After Dynamic Stabilization of the Ankle Syndesmosis: A Retrospective Case Series. *Foot & Ankle Surgery: Techniques, Reports & Cases*, 100260.
- Workman, M. I., Etehad, H., Saragas, N. P., & Ferrao, P. N. (2022). Knee scooter related injuries and satisfaction in patients following foot and ankle surgery. *Foot and Ankle Surgery*, 28(7), 887-890.
- Wu, S., Rothrauff, B., Li, J., & He, J. (2022). Minimizing risk of iatrogenic nerve injury during peroneus longus tendon autograft harvest: a cadaveric study at different ankle or knee positions. *Knee Surgery, Sports Traumatology, Arthroscopy*, 1-7.
- Zekry, M., Shahban, S. A., El Gamal, T., & Platt, S. (2019). A literature review of the complications following anterior and posterior ankle arthroscopy. *Foot and Ankle Surgery*, 25(5), 553-558.
- Zhao, J. Z., Ingall, E. M., Ritter, Z., & Kwon, J. Y. (2022). Radiographically Occult Nonunions After Application of Nitinol Compression Staples: A Report of 3 Cases. *Foot & Ankle International*, 10711007221080963.
- Zhao, Z., Wang, Z., Xidong, X. U., Wang, W., Chen, H., & Chen, Y. (2022). Arthroscopic Surgery for the Treatment of Chronic Plantar Heel Pain. *Foot & Ankle Surgery: Techniques, Reports & Cases*, 100261.