

2022 한국재활로봇학회 Mini-workshop

Functional anatomy of foot and ankle

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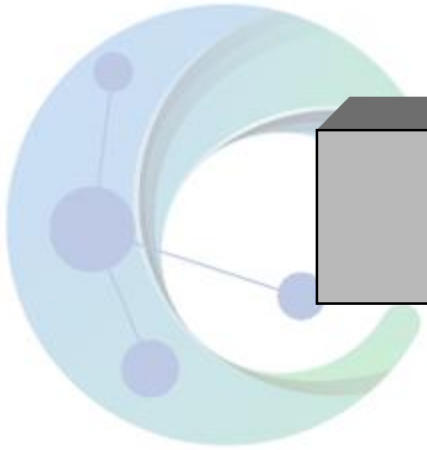
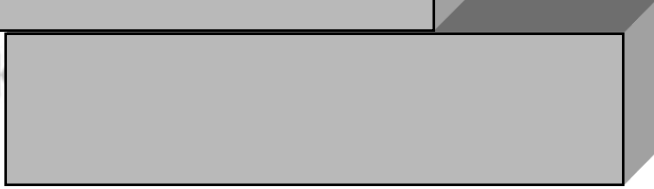
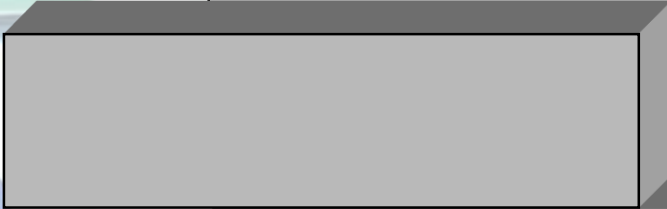
1. Anatomy

2. Joint & Arch

3. Plane & Motion

4. Conclusion

Anatomy

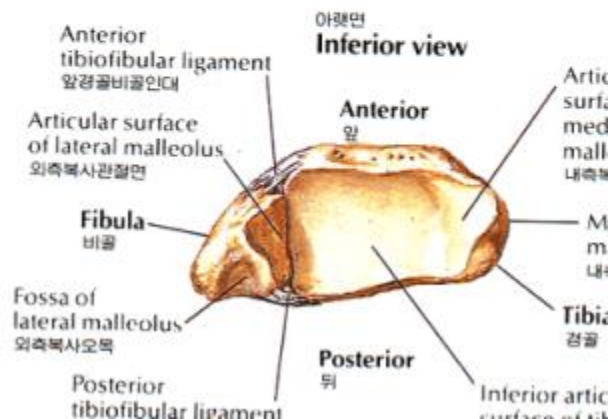
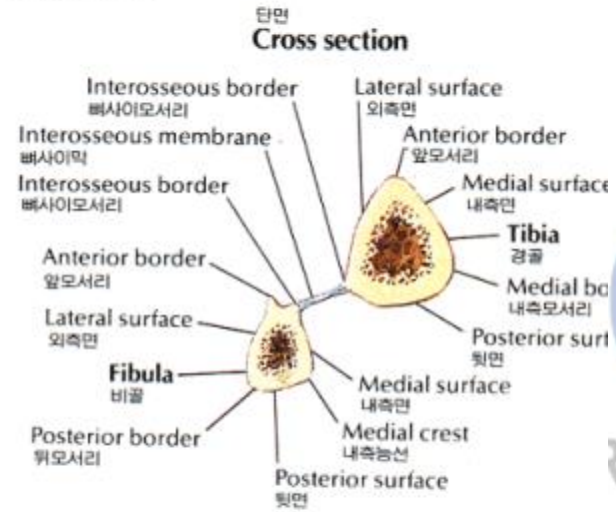
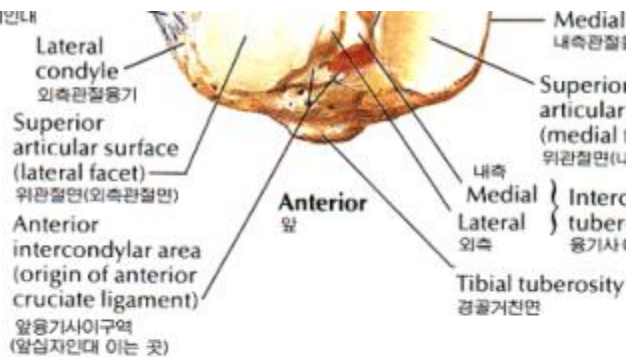
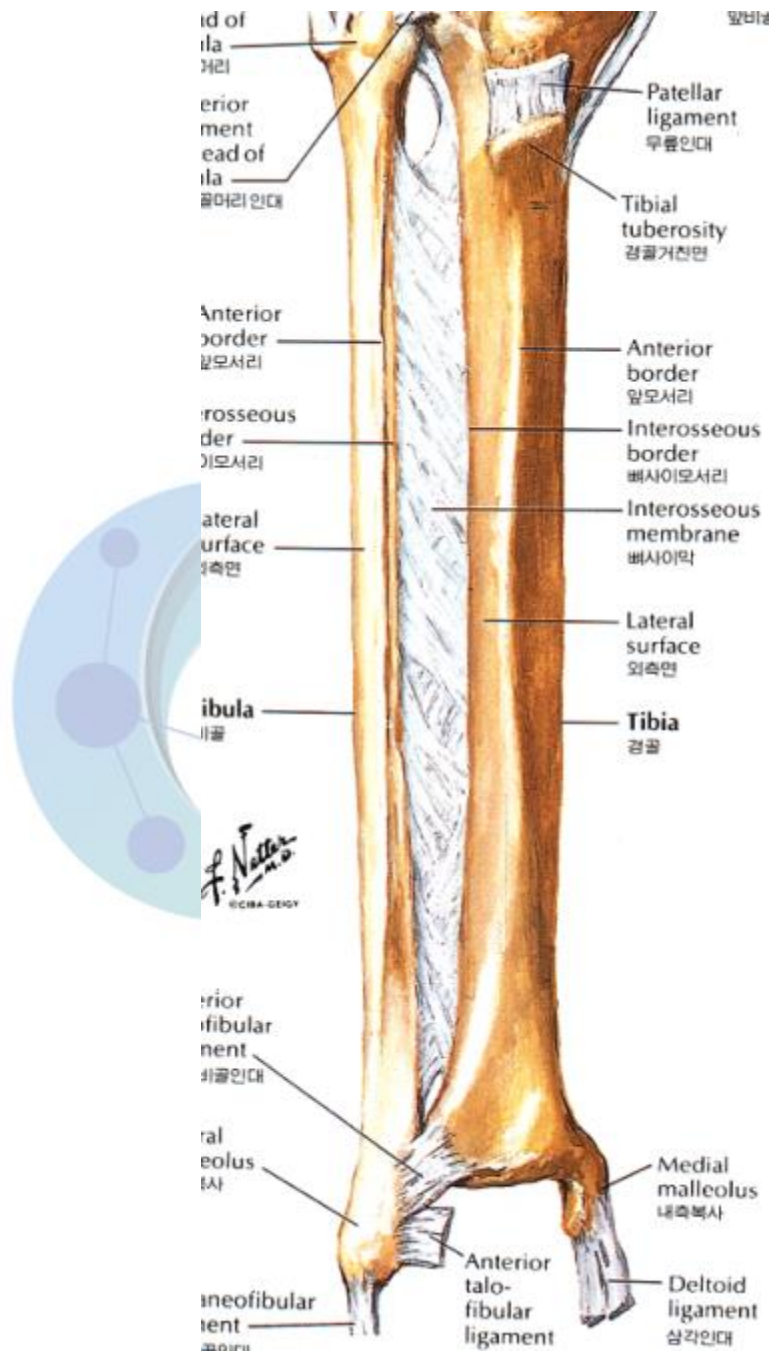


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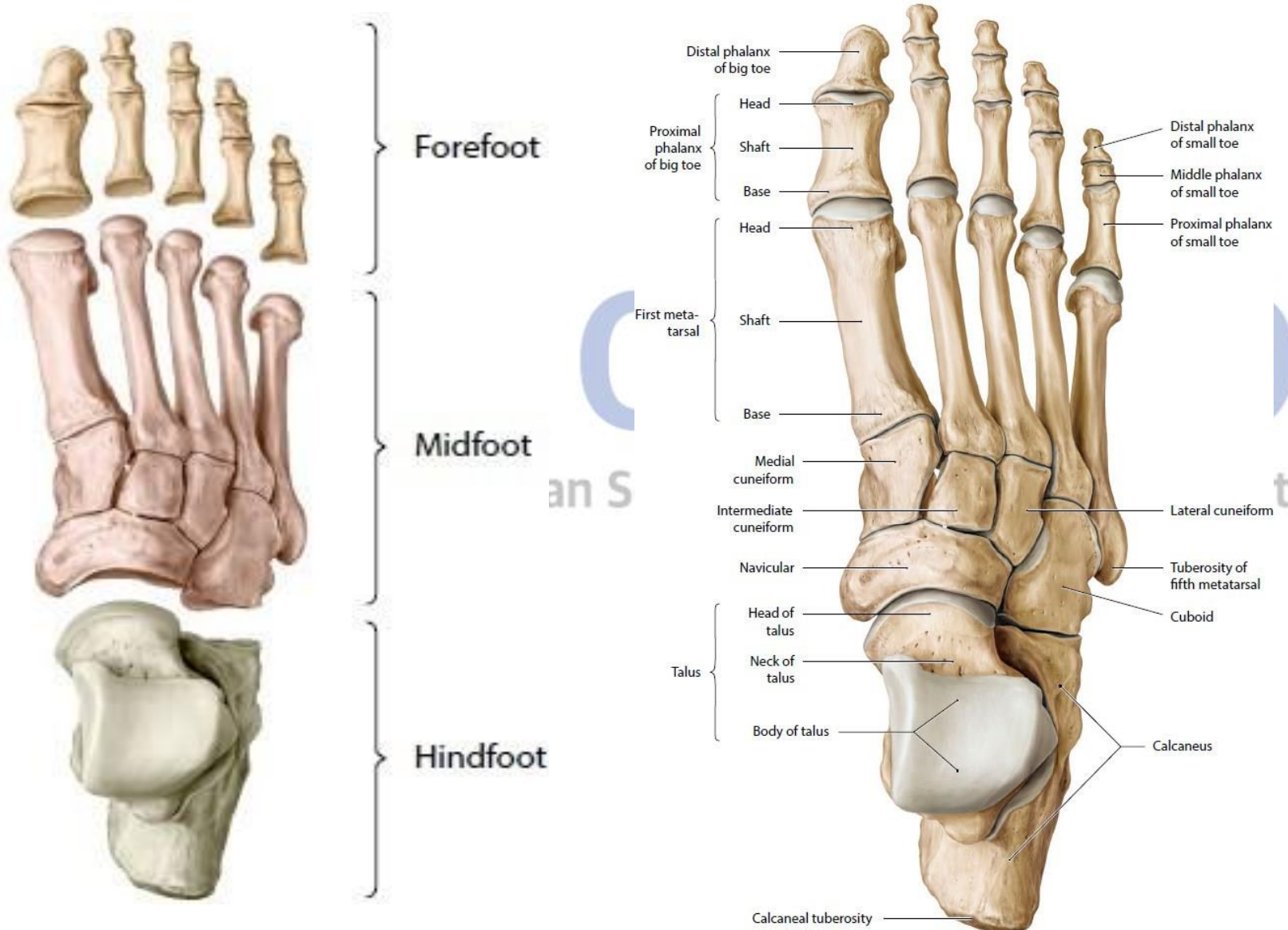
Rehabilitation Robot

Anatomy (1)

- Leg : 2 bones of Tibia / Fibular
- Foot : 26 bones
 - Hindfoot : talus/calcaneus
 - Midfoot : navicular, cuneiform (3), cuboid
 - Forefoot : 5 metatarsals & 14 phalanges
- Leg – Ankle – Foot



Anatomy (2) : Foot

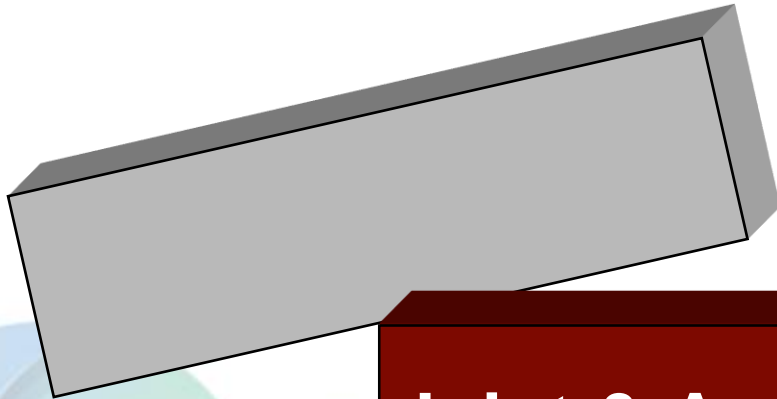


Anatomy (3) : AP

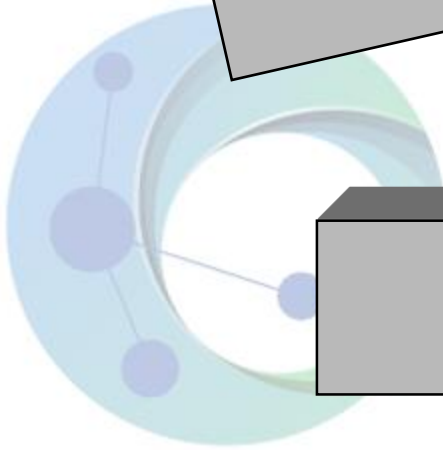


Anatomy (3) : Lateral





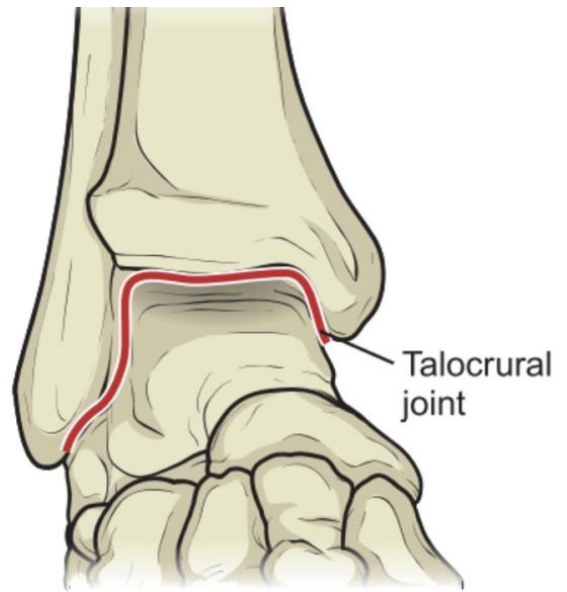
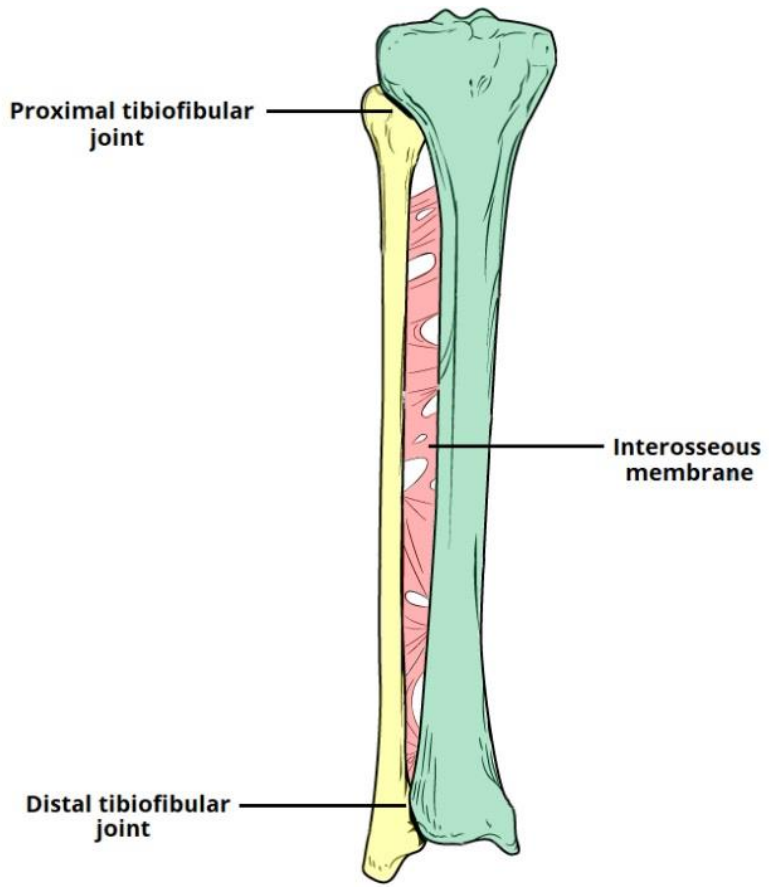
Joint & Arch



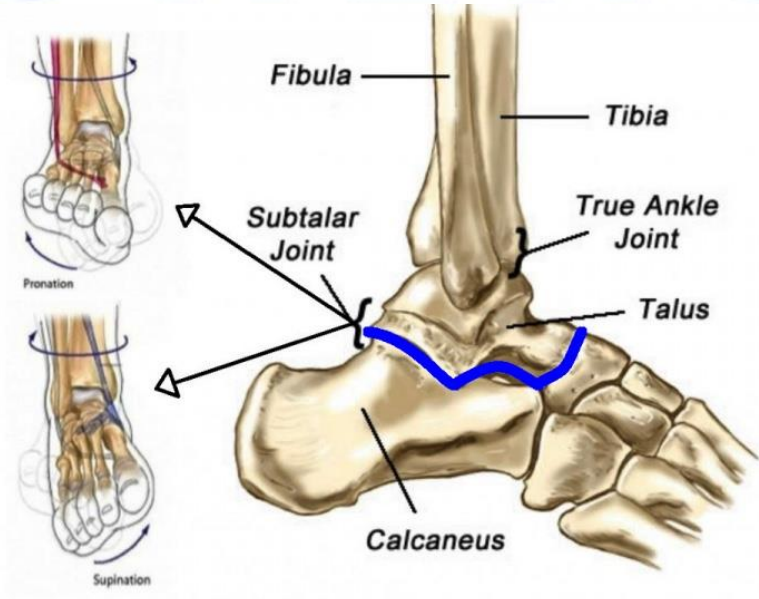
ALERO
of Rehabilitation Robot

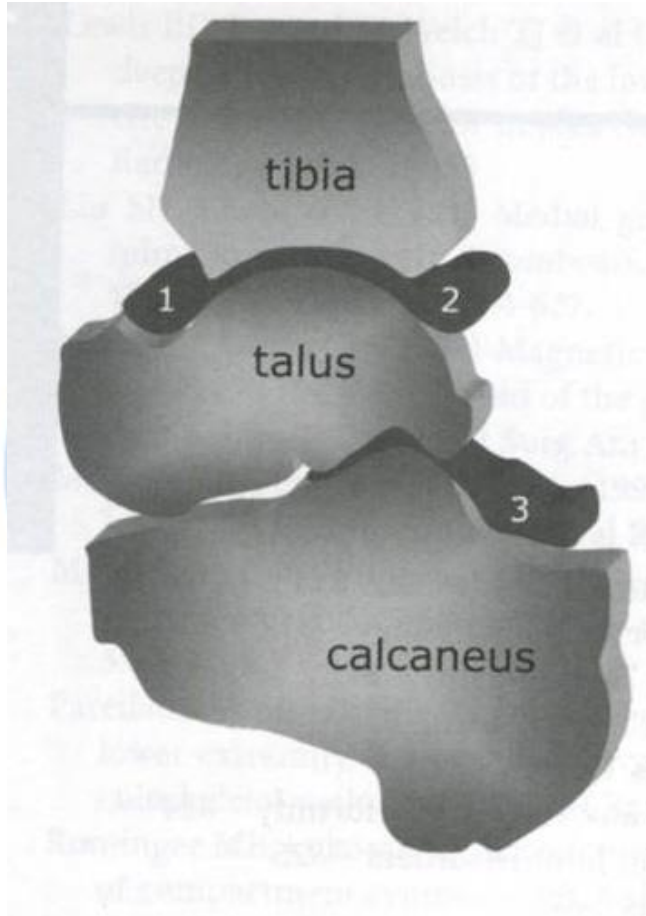
Joint (1) : ankle

- 3 main articulation
 - Distal tibiofibular joint (Syndesmotic joint)
 - Ankle joint (talocrural)
 - Subtalar joint (talocalcaneal)



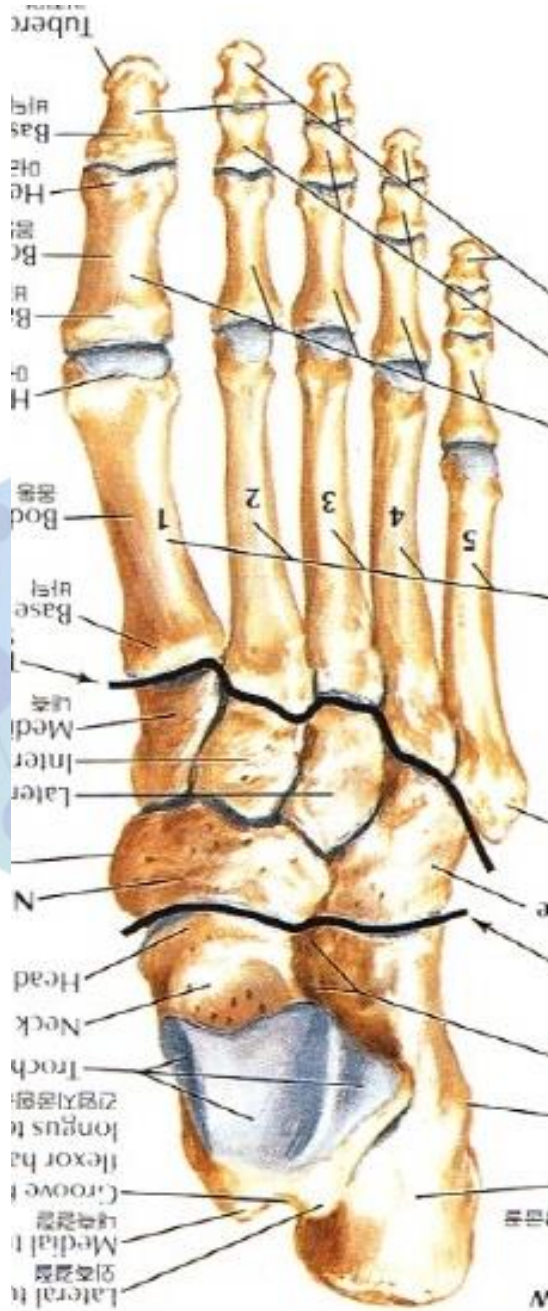
Anterior View





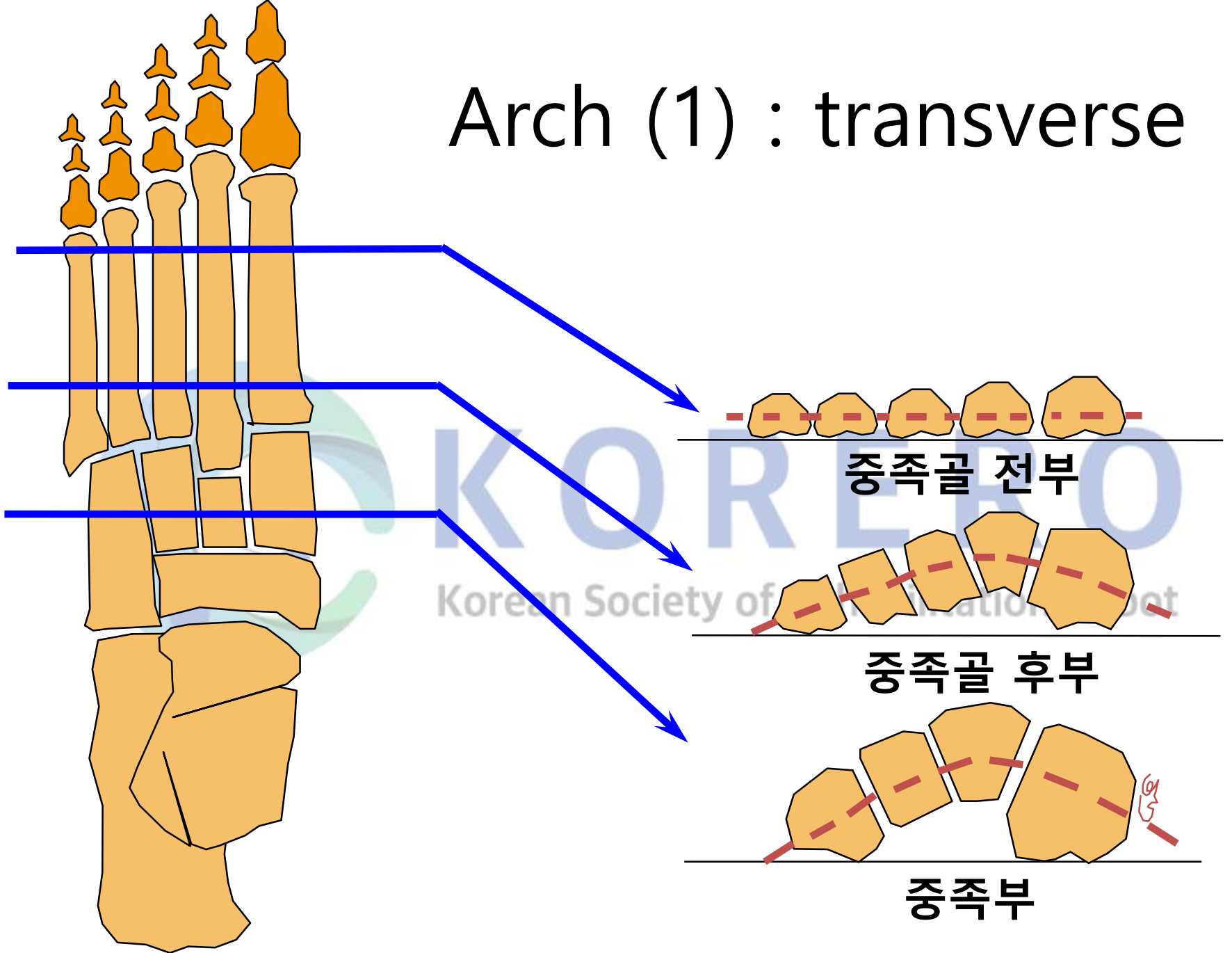


Joint (2) : Foot



- Interphalageal jt
- Metatarsophalangeal (MTP) jt
- Tarso-metatarsal (TMT) jt
- Midtarsal jt
- Transverse tarsal jt

Arch (1) : transverse



Arch (2) - Longitudinal

Medial longitudinal arch :

1/2/3rd metatarsal

3 cuneiforms

Navicular

Talus

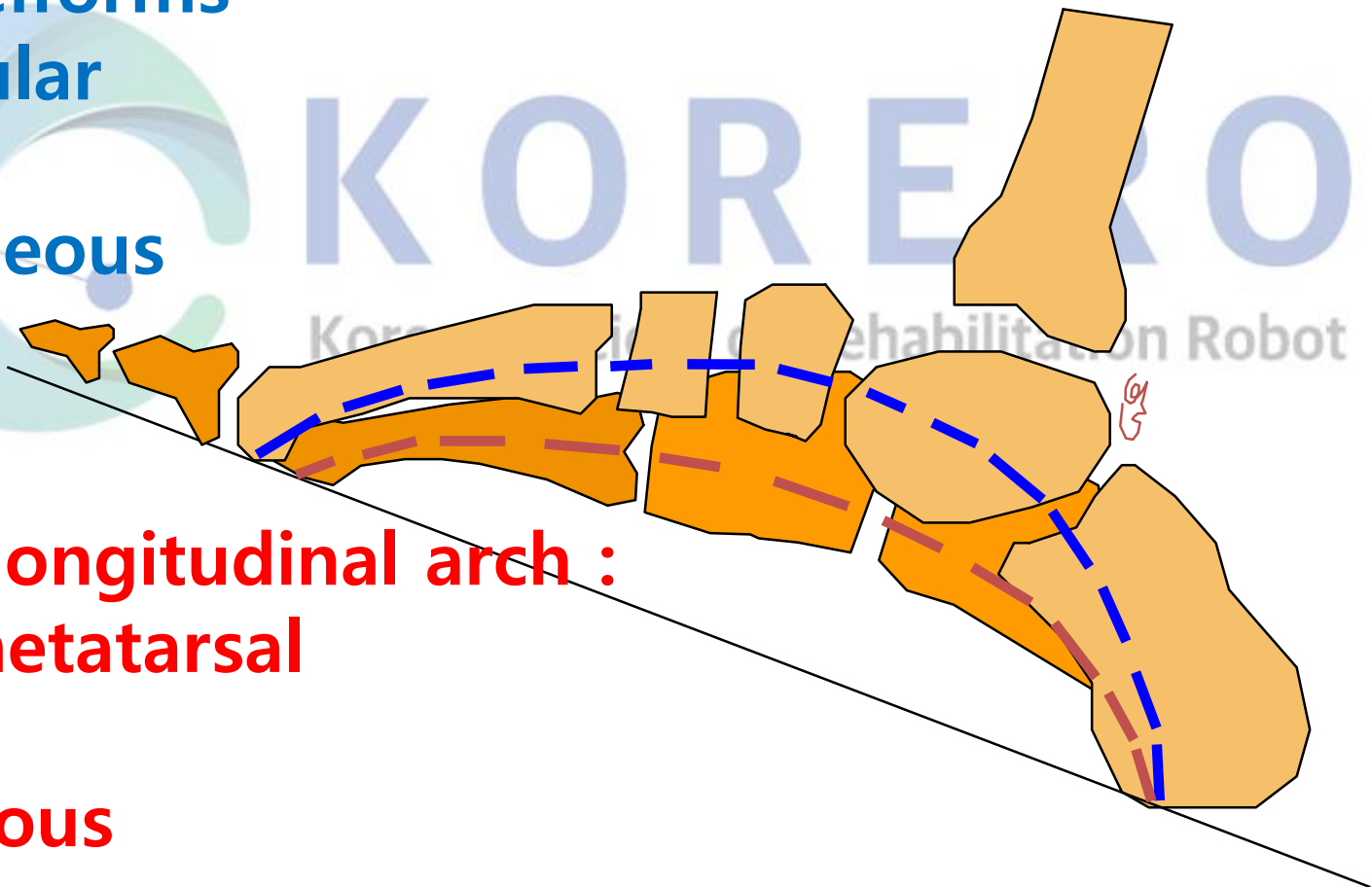
Calcaneous

Lateral longitudinal arch :

4/5th metatarsal

Cuboid

Calcaneous



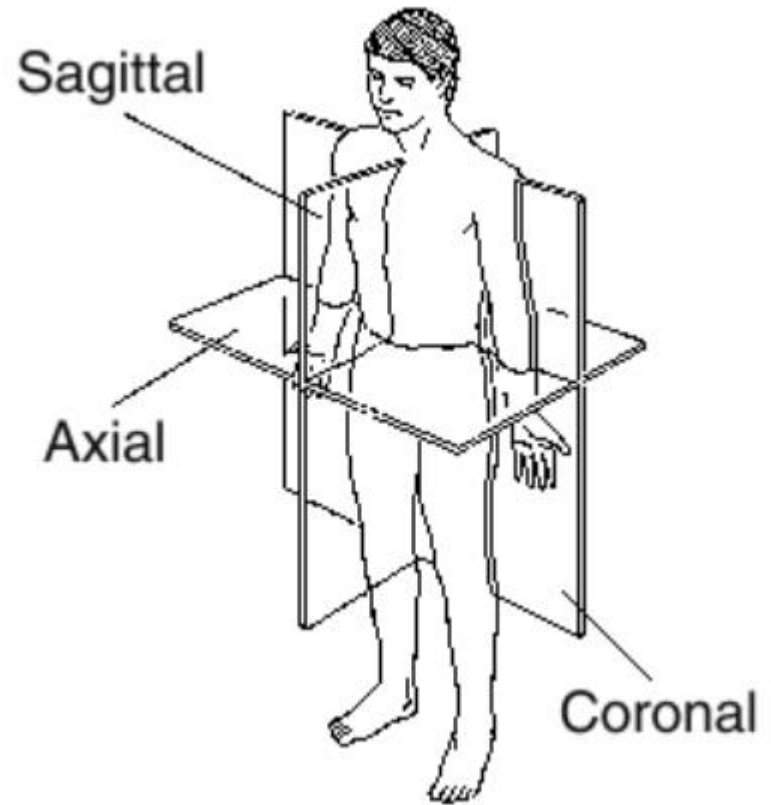


Plane & Motion

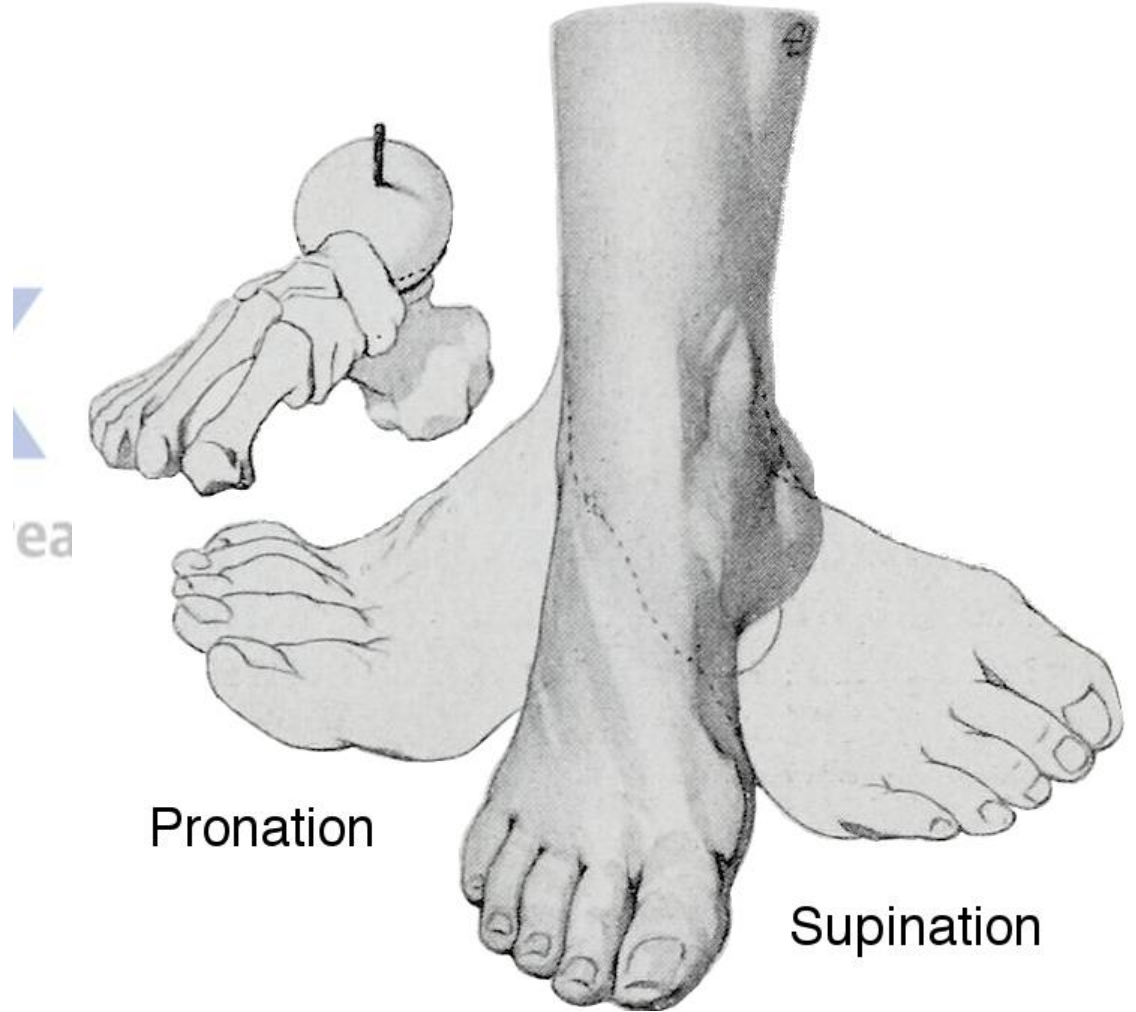
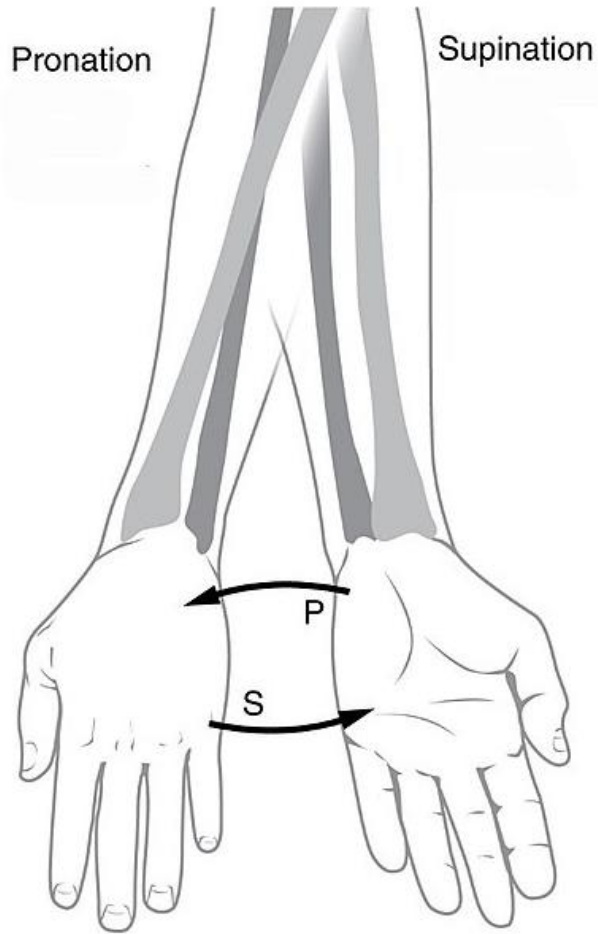
Plane

- 3 Planes

- Axial (횡단면)
- Sagittal (시상면)
- Coronal (관상면)



Motion (1)



Motion (2)

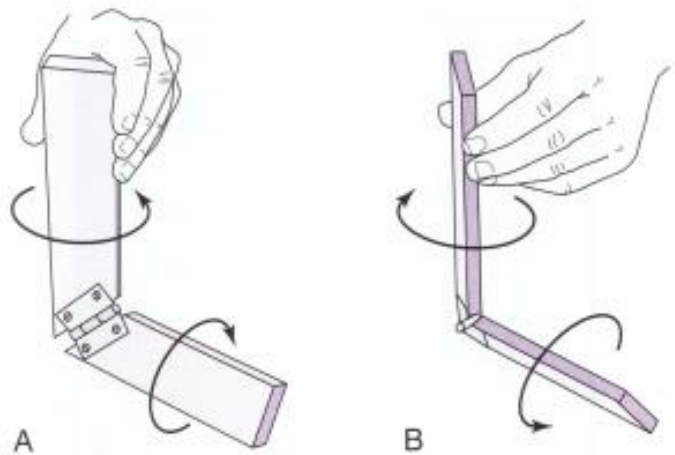
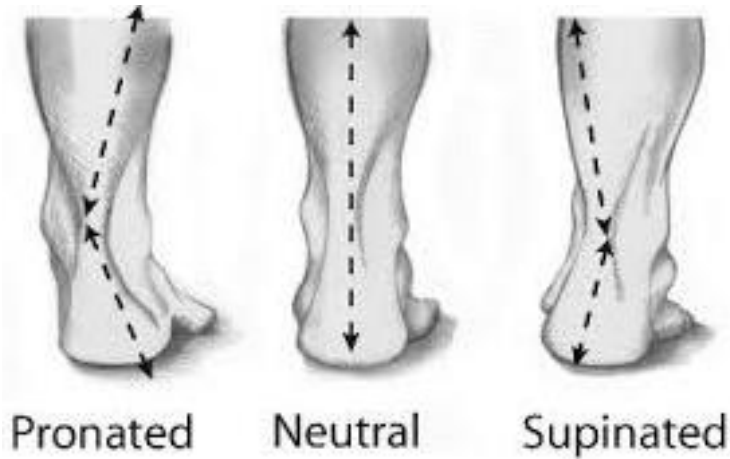
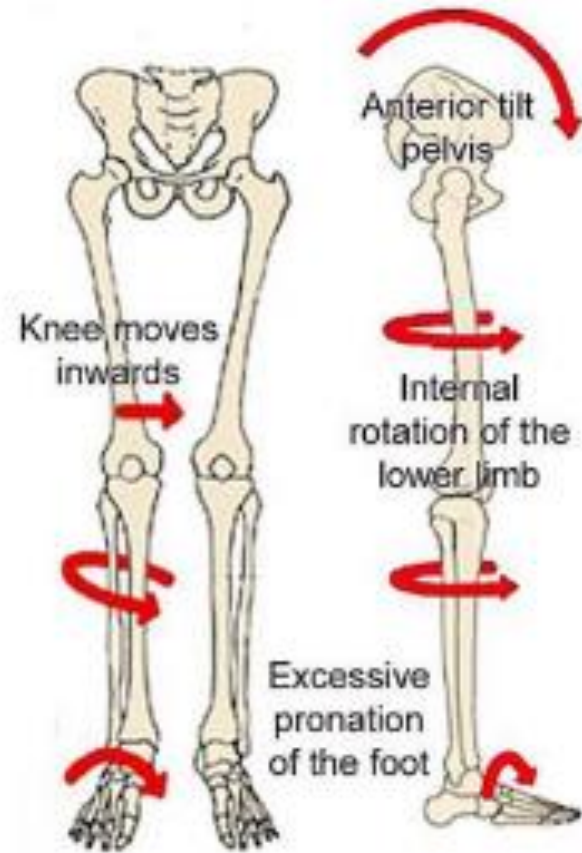
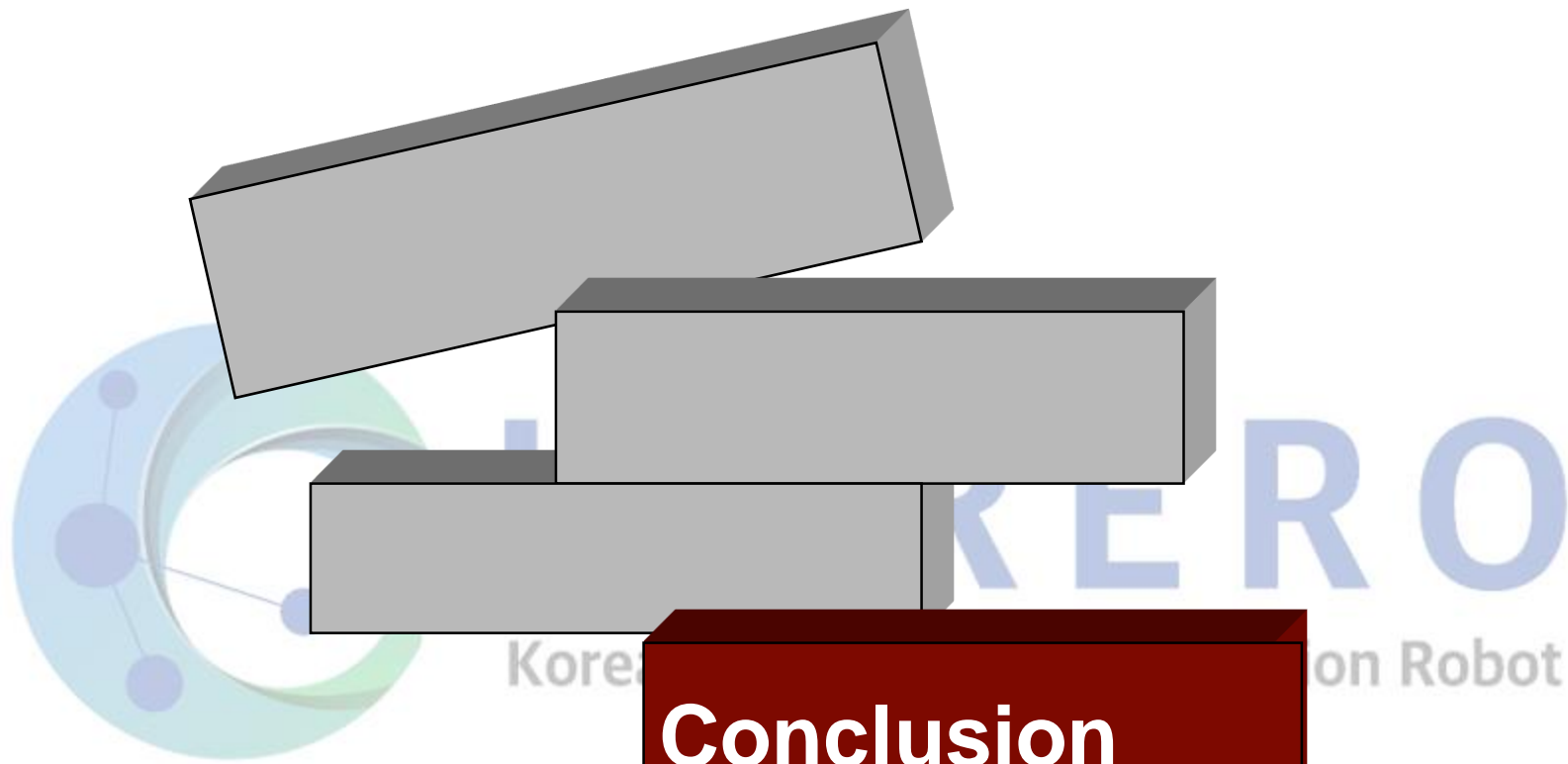


Fig. 23-10 Analogy of the subtalar axes to an oblique hinge. A, Outward rotation of the upper stick results in inward rotation of the lower stick. B, Inward rotation of the upper stick results in outward rotation of the lower stick.

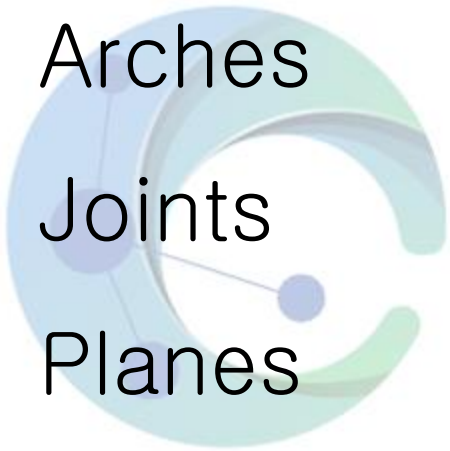




Conclusion

Conclusion

- Bones
- Arches
- Joints
- Planes
- Motions : pronation/supination



K O R E R O

Korean Society of Rehabilitation Robot

References

- 재활의학(대한재활의학회/ 1st ed./ 2020)
- CIBA Essential Atlas of Human Anatomy



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Thanks for
your attention

