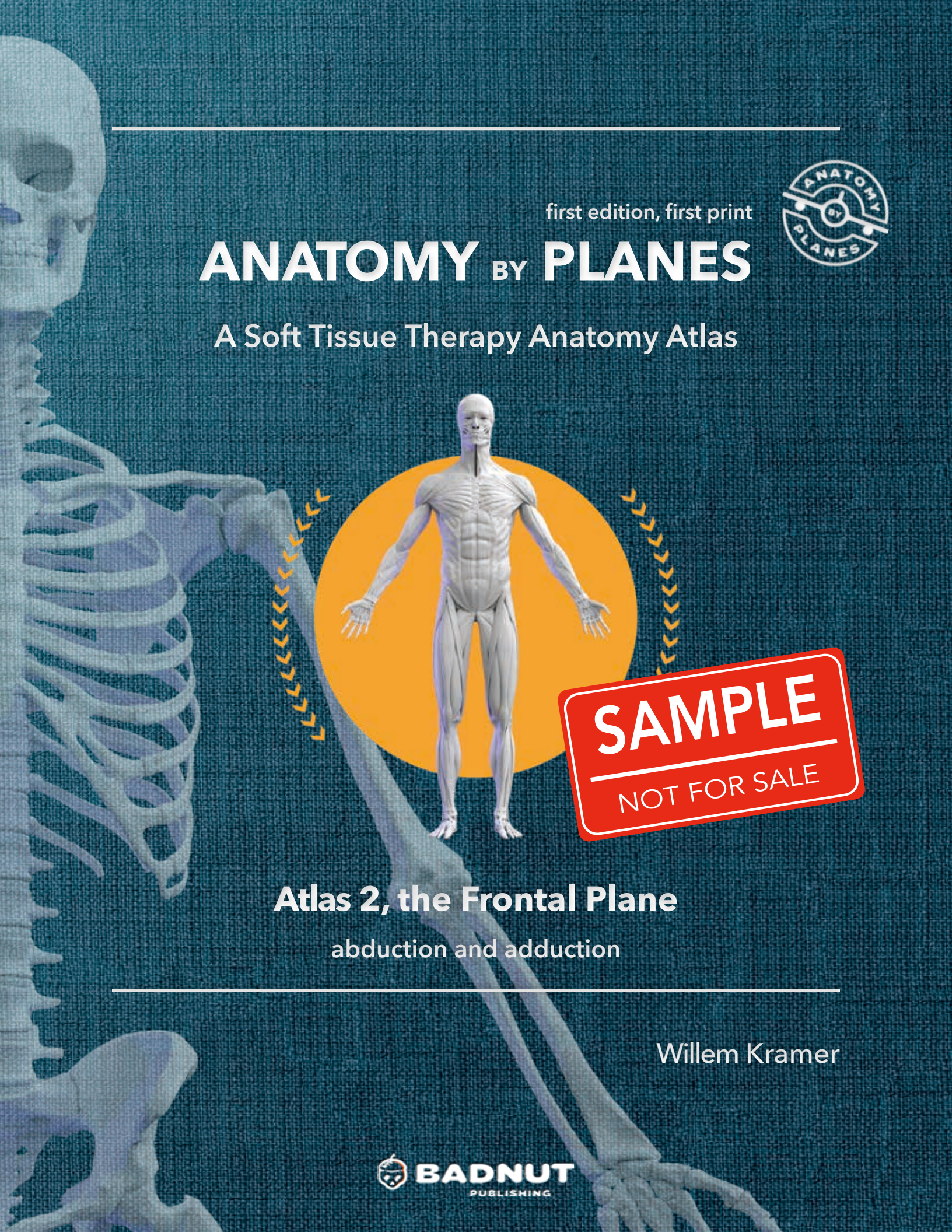
first edition, first print

ANATOMY BY PLANES

A Soft Tissue Therapy Anatomy Atlas



SAMPLE

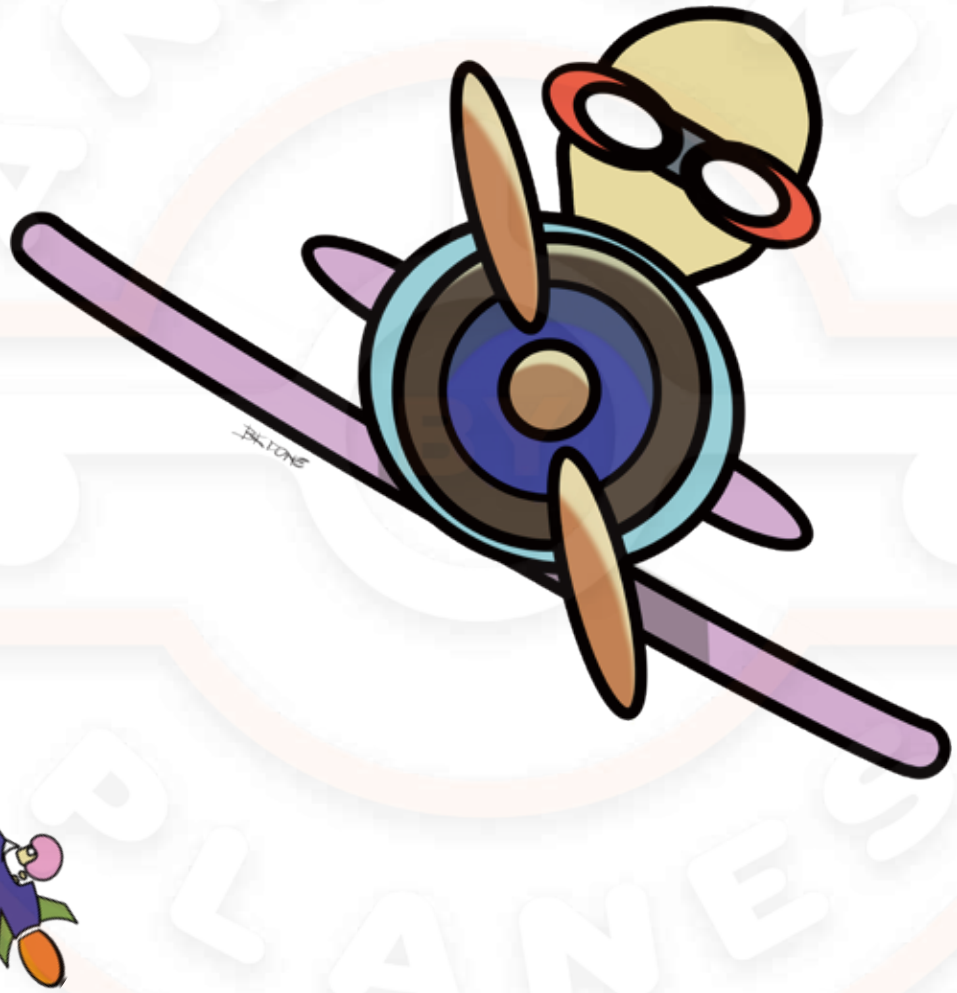
NOT FOR SALE

Atlas 2, the Frontal Plane

abduction and adduction

Willem Kramer

BADNUT PUBLISHING



Anatomy by Planes

SAMPLE

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https://www.anatomybyplanes.com

Dedication

Voor moeder en vader. Thank you for being my mom and dad.

SAGITTAL

FRONTAL

3.01

FRONTAL ANKLE

WHAT TO TREAT AND EXERCISE

WHEN ANKLE EVERSION-INVERSION HURT

ATLAS 2

~~F5~~
~~F4~~
→ ~~F3~~
~~F2~~
~~F1~~

passive complex

Motion

Frontal ankle

The upper ranges are passive - ie, no voluntary effort or muscle activity.

There's no agreement on the range of these combined motions.

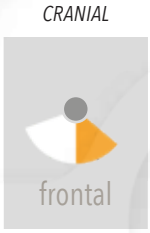
"Normal" total ROM
Eversion & abduction: 15 - 50 degrees
Inversion & adduction: 25 - 70 degrees

EVERSION & ABDUCTION

bringing outside of foot outward and up

left ankle

Eversion & Abduction *

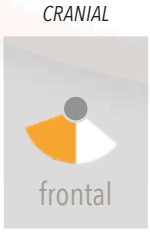


INVERSION & ADDUCTION

bringing inside of foot inward and up - ie, like rolling ankle inward

left ankle

Inversion & Adduction *



*anterior view, **LEFT** ankle*

*posterior view, **LEFT** ankle*

front-2-back axis

Dermatomes and Muscle Overview

Frontal ankle

dermatomes

T11 - S2

SKIN

* From here on down, I refer to the combined motions as eversion and inversion. I'm leaving the abduction and adduction parts out.

anterior view

posterior view

MUSCLE

Joints

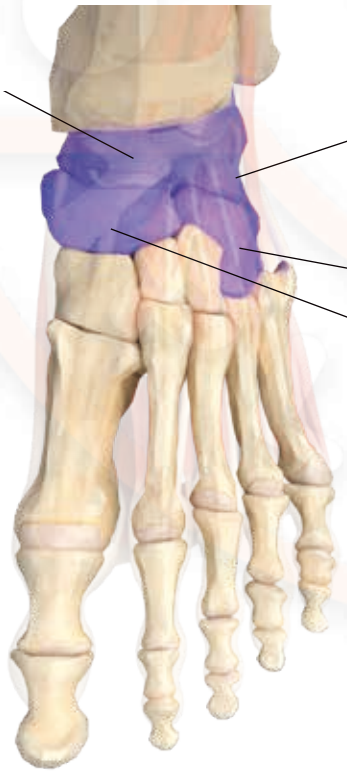
Frontal ankle

JOINT

OVERVIEW

*anterior view, **LEFT** ankle*

*posterior view, **LEFT** ankle*



*dorsal view, **LEFT** ankle*

*plantar view, **LEFT** ankle*

MAGNIFIED

anterior view, ***LEFT*** ankle

Eversion and inversion happen in the talocalcaneal joint.

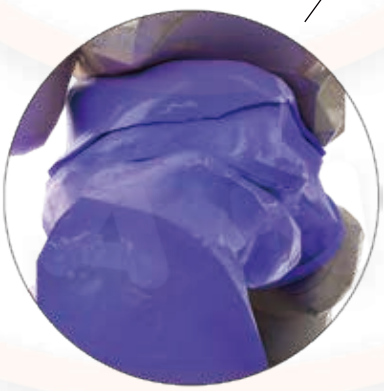
posterior view, ***LEFT*** ankle

The talocalcaneal joint is situated under, distal to, the talocrural joint.

Talocalcaneal joint
(talus to calcaneus)

aka subtalar joint

anterior view, ***LEFT*** ankle



posterior view, ***LEFT*** ankle

the talus and calcaneus bones belong to the hindfoot

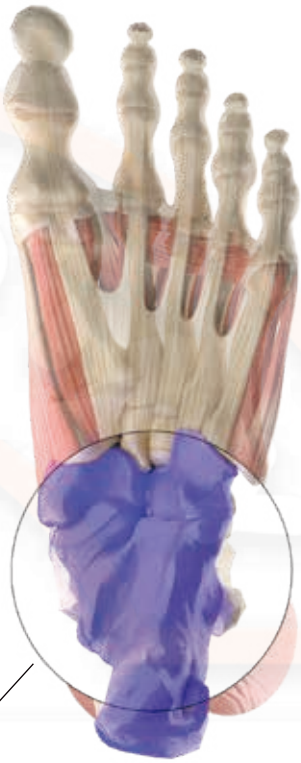
lateral view, ***LEFT*** ankle

Abduction and adduction of the frontal ankle occur in the transverse tarsal joint, moving the mid- and forefoot in relation to the hindfoot.

Together, the talonavicular and calcaneocuboid joints are known as the transverse tarsal joint.

Transverse tarsal joint

aka midtarsal joint or Chopart joint



MAGNIFIED

dorsal view, **LEFT** ankle

plantar view, **LEFT** ankle

Talonavicular joint
(talus to navicular)

Calcaneocuboid joint
(calcaneus to cuboid)

dorsal view, **LEFT** ankle

plantar view, **LEFT** ankle

lateral view, **LEFT** ankle

the navicular and cuboid bones are part of the midfoot

Ankle Evertors

Single-complex

SKIN

MUSCLE

plantar view

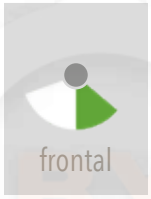
*anterior view, **LEFT** leg*

*posterior view, **LEFT** leg*

There are three, but I combined the peroneus longus and brevis.

There are ***two*** single-complex evertors.

*anterior view, **LEFT** leg*



*posterior view, **LEFT** leg*

*dorsal view, **LEFT** foot*

*plantar view, **LEFT** foot*

S

F

3

MOTION

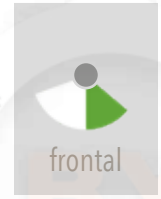
lateral view

LC, see p. 18

1

Peroneus longus & peroneus brevis

The brevis is situated under (medial to) and partly behind (posterior to) the longus.



anterior view, **LEFT** leg

DEPTH

posterior view, **LEFT** leg

DEPTH

brevis

dorsal view, **LEFT** foot

DEPTH

brevis attachment

longus attachment

plantar view, **LEFT** foot

AC,
see p. 18

DEPTH

2

Peroneus tertius

S

F

3

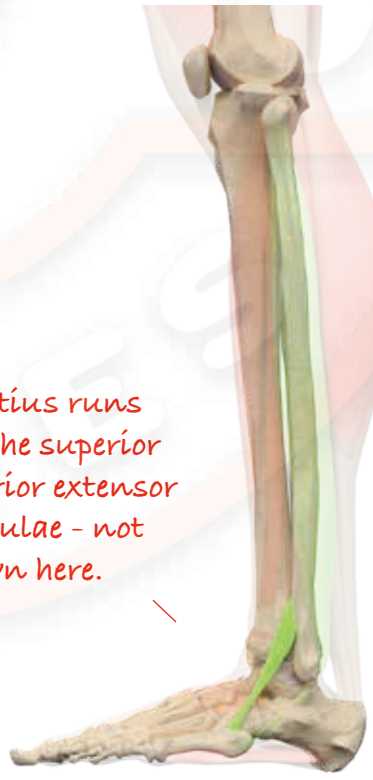
MOTION

frontal

*anterior view, **LEFT** leg*

*posterior view, **LEFT** leg*

The tertius runs behind the superior and inferior extensor retinaculae - not shown here.



*lateral view, **LEFT** leg*

Ankle Invertors

Single-complex

SKIN

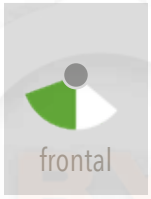
MUSCLE

*anterior view, **LEFT** leg*

*posterior view, **LEFT** leg*

There are ***two*** single-complex invertors.

*anterior view, **LEFT** leg*



*posterior view, **LEFT** leg*

*dorsal view, **LEFT** foot*

*plantar view, **LEFT** foot*

AC,
see p. 18

S

F

3

MOTION

DEPTH

anterior view, ***LEFT*** leg

1

Tibialis anterior

tibialis ant attachment

DEPTH

plantar view, ***LEFT*** foot

dorsal view, ***LEFT*** foot

DPC,
see p. 18

DEPTH

posterior view, ***LEFT*** leg

2

Tibialis posterior

DEPTH

plantar view, ***LEFT*** foot

S

F

3

MOTION

Note that the attachment of the tibialis posterior is pictured general and abstract, ie, not life-like.

Ankle Evertor

Multi-complex

MUSCLE

There is ***one*** multi-complex evertor.

AC, see p. 18

DEPTH

S

F

1

Extensor digitorum longus

3

2

MOTION

DEPTH

*anterior view, **LEFT** leg*

*dorsal view, **LEFT** foot*

The leg has four clearly defined compartments; one anterior (front), one lateral (outside), and two posterior (back). The evertors and invertors of the frontal ankle are divided over three of them, the anterior (AC), lateral (LC), and deep posterior (DPC) compartments.

AC
1. Extensor digitorum longus (p. 17) - EVR.
2. Extensor hallucis longus (p. 21) - IVR.
3. Peroneus tertius (p. 12) - EVR.
4. Tibialis anterior (p. 15) - IVR.

LC
1. Peroneus longus & brevis (p. 11) - EVR.

DPC
1. Flexor digitorum longus (p. 22) - IVR.
2. Flexor hallucis longus (p. 21) - IVR.
3. Tibialis posterior (p. 16) - IVR.

EVR: evertor.
IVR: invertor.

The muscles are, per compartment, listed in alphabetical order.

Please note that muscles often blend with - ie, originate from - the deep fasciae and bones that form the compartments.

For more on the compartments of the leg see atlas 1, pp. 35 through 59.

Ankle Invertors

Multi-complex

MUSCLE

*anterior view, **LEFT** leg*

*posterior view, **LEFT** leg*

OVERVIEW

*dorsal view, **LEFT** foot*

*plantar view, **LEFT** foot*

There are ***three*** multi-complex invertors.

*anterior view, **LEFT** leg*

*posterior view, **LEFT** leg*

*dorsal view, **LEFT** foot*

*plantar view, **LEFT** foot*

AC,
see p. 18

S
F

DEPTH

anterior view, ***LEFT*** *leg*

3
1

MOTION

1 Extensor hallucis longus

DEPTH

dorsal view, ***LEFT*** *foot*

S
F

DEPTH

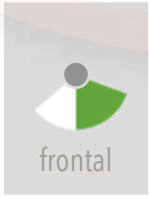
posterior view, ***LEFT*** *leg*

3
1

MOTION

2 Flexor hallucis longus

DPC,
see p. 18



DEPTH

plantar view, ***LEFT*** *foot*

depth 3, deep to skin and 2 layers of muscle

DEPTH

DPC, see p. 18

3

Flexor digitorum longus

posterior view, ***LEFT*** leg

DEPTH

plantar view, ***LEFT*** foot

S
F
3
2
MOTION

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