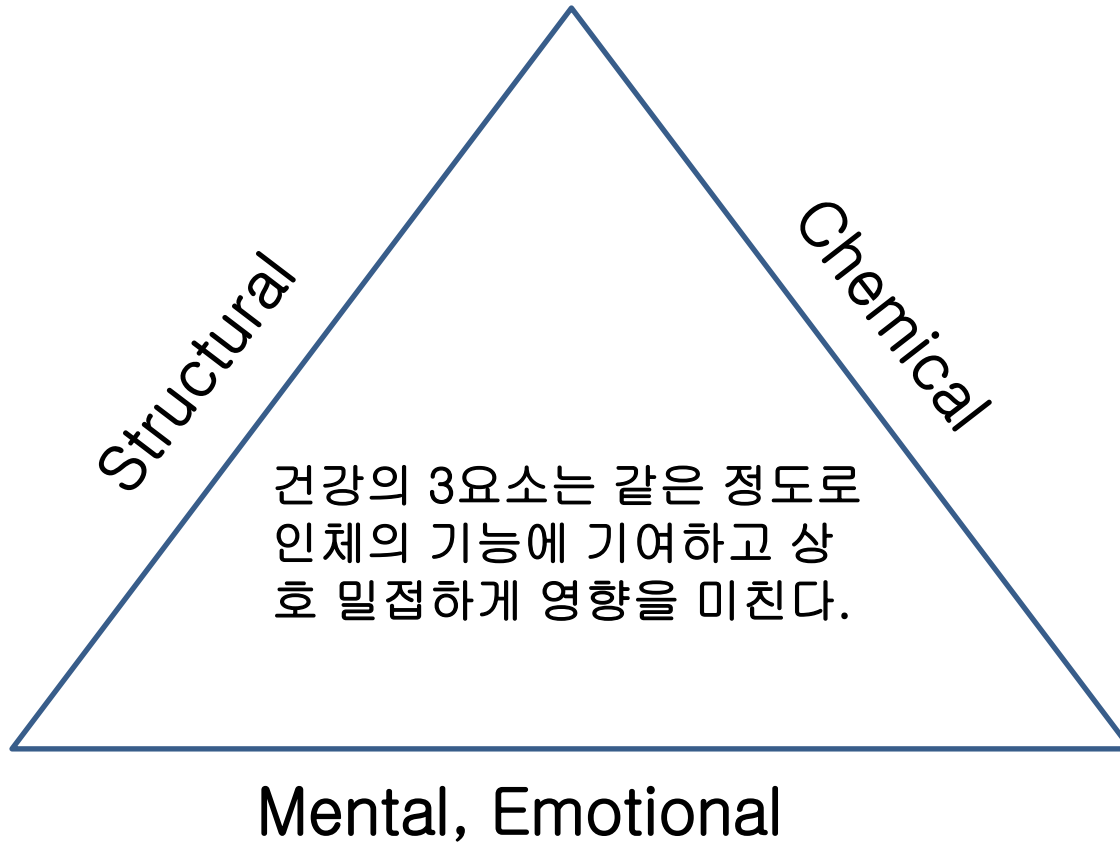


Session 4

Review

- Muscle testing: dynamic change of brain activity
- Muscle testing for functional, neurological, neurochemical evaluation
- Muscle testing을 정확하게 하여야.
- Muscle testing을 정확하게 하는 데는 시간이 걸린다. Practice, practice and practice!!!!

Dr. Goodheart 건강의 3요소



Adrenal stress disorder

- Emotional, Chemical, Physical, Thermal
- Hormonal relationship
- Structural relationship
 - Subluxation of all joint (foot, knee, SI, Spine, TMJ...)

Category II

- SI joint subluxation PI, AS
- Adrenal relation
- Foot relation
- Sacral, L5 subluxation-secondary?

Excessive pronation of foot

- Adrenal relation
- TP
- Ligament stretch reaction
- Foot deformity
- Callus
- Shoe wearing
- Closed kinematic chain up to TMJ

Excessive pronation과 관련

- Foot
 - Plantar fasciitis, heel spur, tarsal tunnel syndrome, Achilles tendinitis, tenosynovitis of foot, Morton's neuroma, sinus tarsi syn, functional hallux limitus, claw, hammer toe, callus, hallux valgus
- Patellar tracking synd
- SI joint
- TMJ

Excessive pronation의 치료

- Subluxation reduction
- Muscle balance
- Orthotics
- Rehabilitation exercise
- Adrenal care

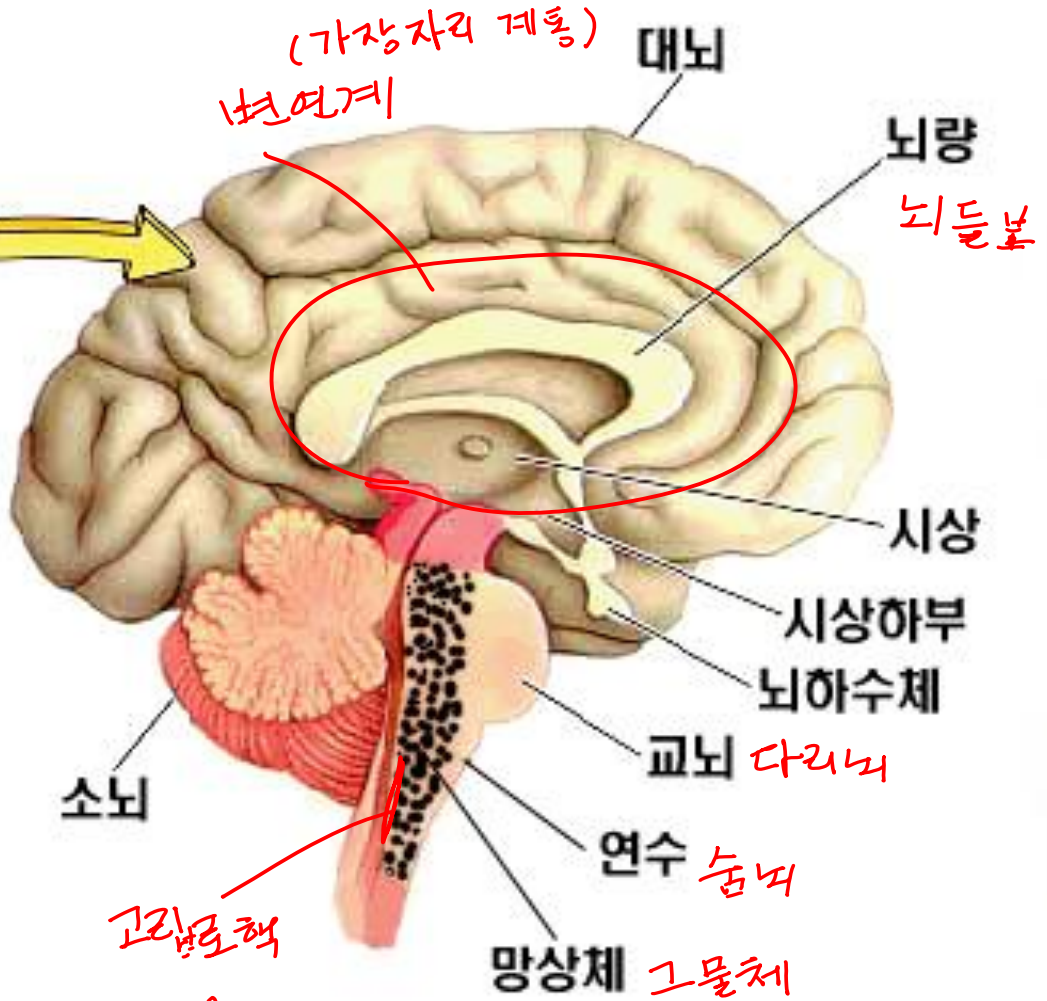
Hidden food allergen

- Dysbiosis
- Toxic overload
- K27
- Major craniosacral fault

통증의 신경생리학

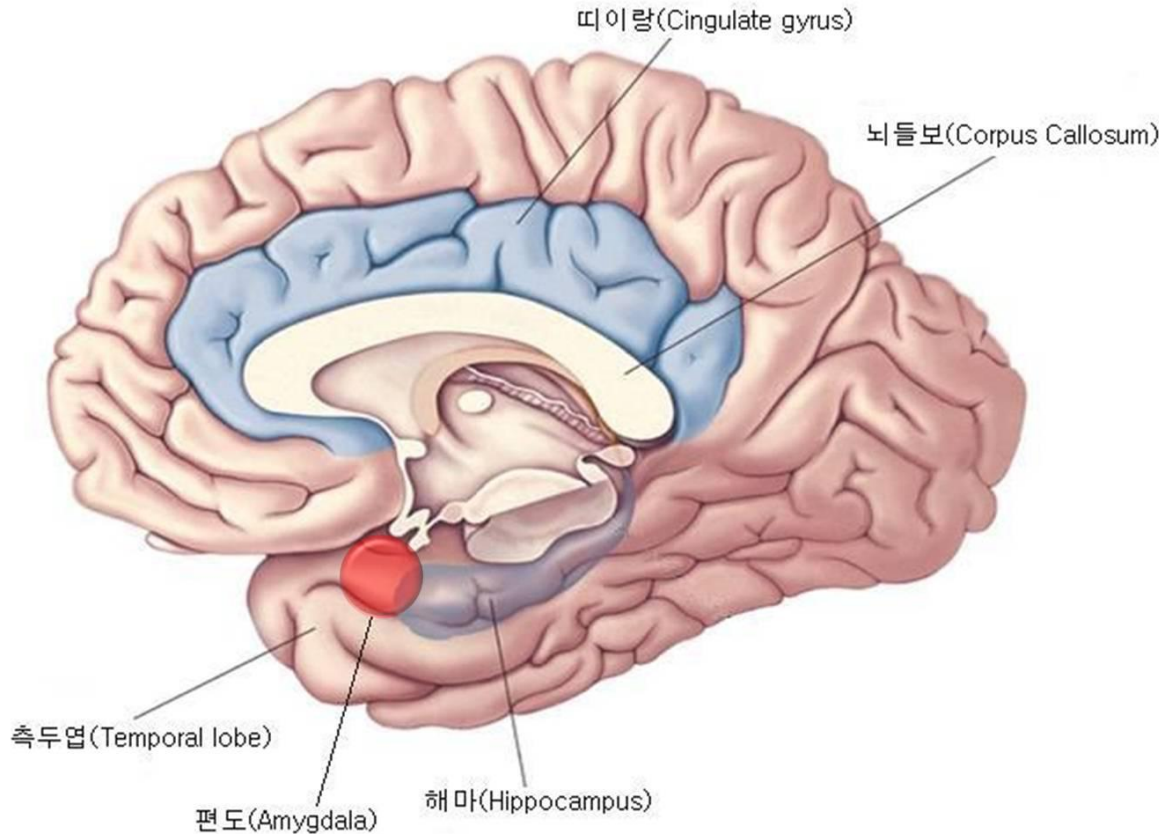
- Pain vs nociception
- Pain: the perception of an unpleasant sensation that originates from a specific region of the body which experiences in limbic system such as cingulate gyrus.
- Nociception: an activation of receptor due to tissue damage or aberrancies of spinal motion segment etc, which may be localized in the parietal cortex and be memorized in the temporal lobe.

- Pain is an unpleasant experience due to adequate activation of nociceptive afferent system and is subjective to an individual and has different levels of experience.
- International association for the study of pain :
- Definition of pain:
- A sensory and emotional response to adequate activation of the nociceptive system associated with tissue disorder or other things.



(NTS nucleus tractus solitarius)

감정뇌, 대뇌가장자리계통(대뇌변연계, limbic system)



편도(扁桃, almond, amygdala)

해마(hippocampus)

띠이랑(ant cingulate gyrus, 대상회)

시상하부 (hypothalamus)

Temporal cortex

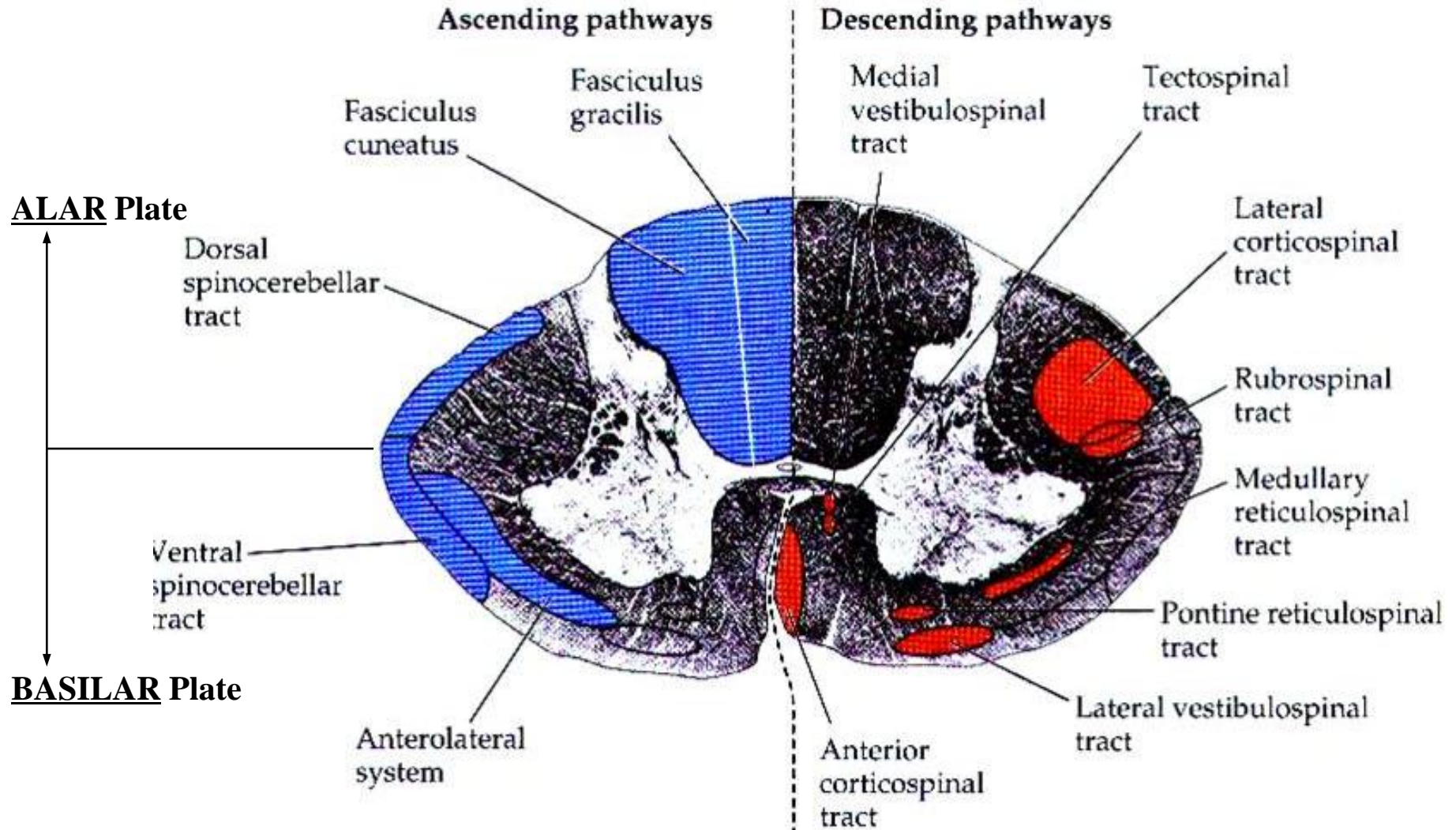
Entorhinal cortex

- Inf prefrontal cortex

- Pain is more patient's perspective and also not very much important in exam. Nociceptive system is normally quiescent and needs activation for pain experience.
- Mechanical type of nociception from free nerve ending such as sharp, stabbing pain is conveyed by A delta fiber (5-20 m/s) : joint, fascial plane; can be depolarized by mechanical angulation or distortion of fascial plane

- chemical type of nociception such as burning, dull, and aching pain may be transmitted by C-fiber (0.5 – 2m/s) usually as a consequence of muscle metabolism, breakdown of cells, endproduct of anaerobic metabolism etc.

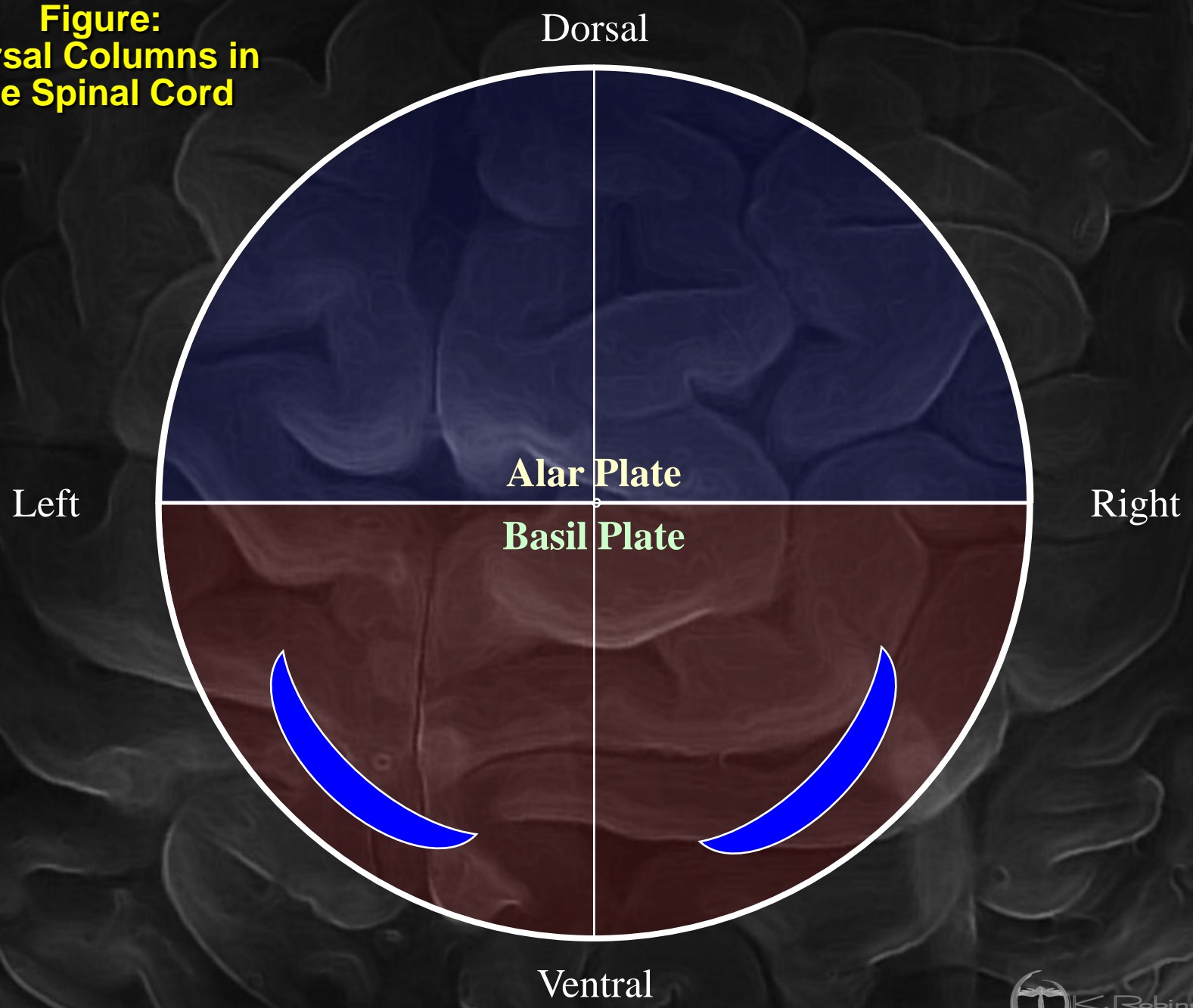
Picture: Spinal Cord Section, Blumenfeld



Spinothalamic Tract (AKA Anterolateral System)

- This pathway carries **pain** and **temperature** sensation from the periphery to the cord to the thalamus. It also carries information to various areas of the brain & brainstem. Peripherally this starts with small diameter afferent fibers.
 - **Pain Temperature = A δ and C fibers**
 - **Light Touch = A β fibers**
- Information passes through the dorsal root ganglia to synapse in the dorsal horn
 - A δ and C fibers pass through the dorsolateral tract of Lissauer to synapse in **Rexed Lamina II (Substantia Gelatinosa)** and largely make up the **anterior spinothalamic tract**.
 - A β fibers pass through the medial division of the spinal root to synapse in **Rexed lamina V** and largely make up the **lateral spinothalamic tract**.
- These afferents then crosses to the basal plate just anterior to the central canal.
 - Discuss cord rules and application.

**Figure:
Dorsal Columns in
the Spinal Cord**



Spinothalamic Tract (AKA Anterolateral System)

- As this pathway crosses over it may ascend **one to two levels** (some even say 3).
- This information ascends up the cord in a laminar distribution, such that in the cord the arms are medial and the legs are lateral.
- This now continues to travel through the brainstem near the ascending posterior column projections which are coming from the same side.
 - Clinically, this is the only place with the two pathways together, with exception of the peripheral nerve itself.
- As it continues to ascend it eventually synapses on the VPL of the thalamus and then to the Cortex, its laminar distribution again changes to the leg medial and the arm lateral.

Picture: Spinothalamic pathway

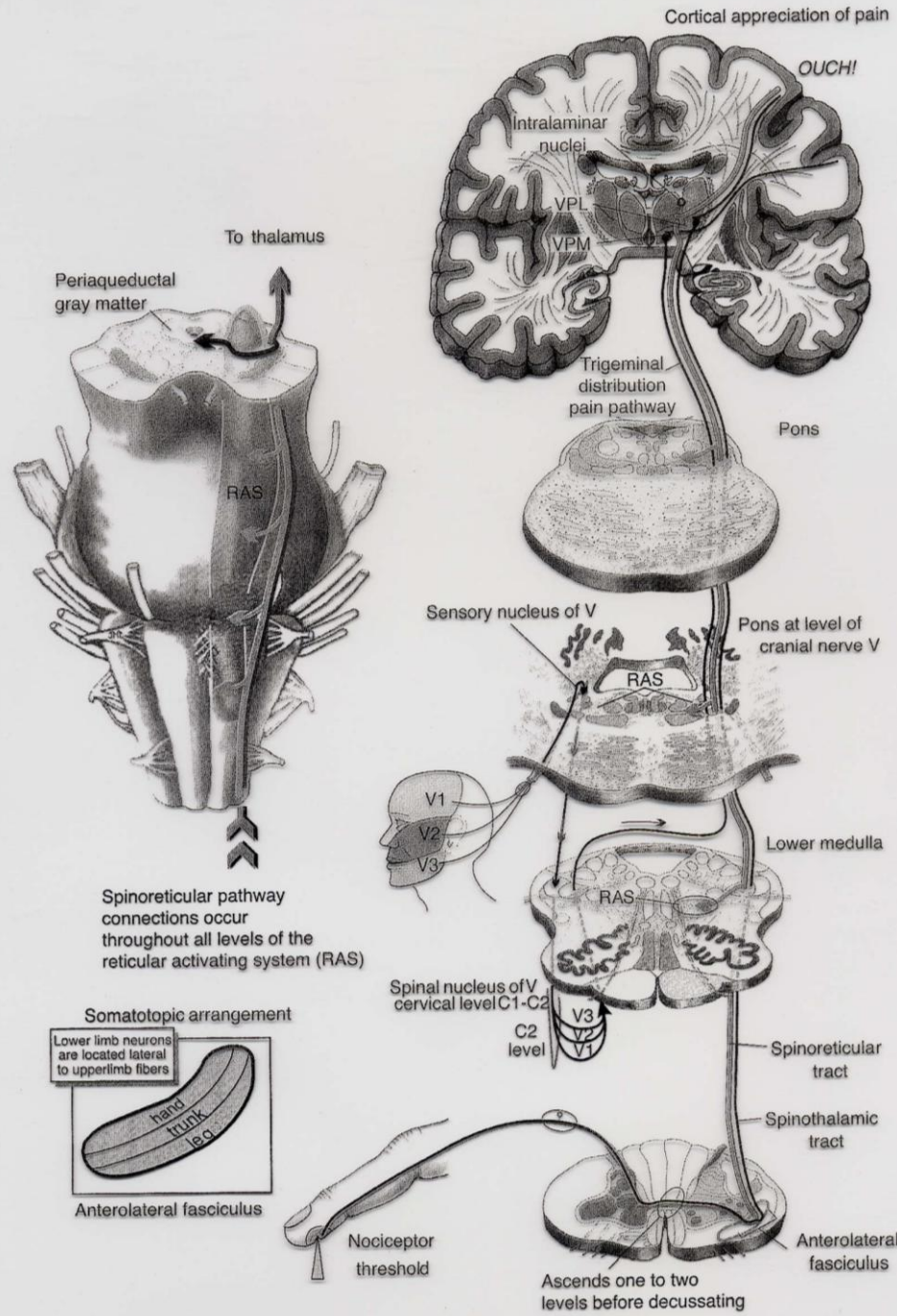
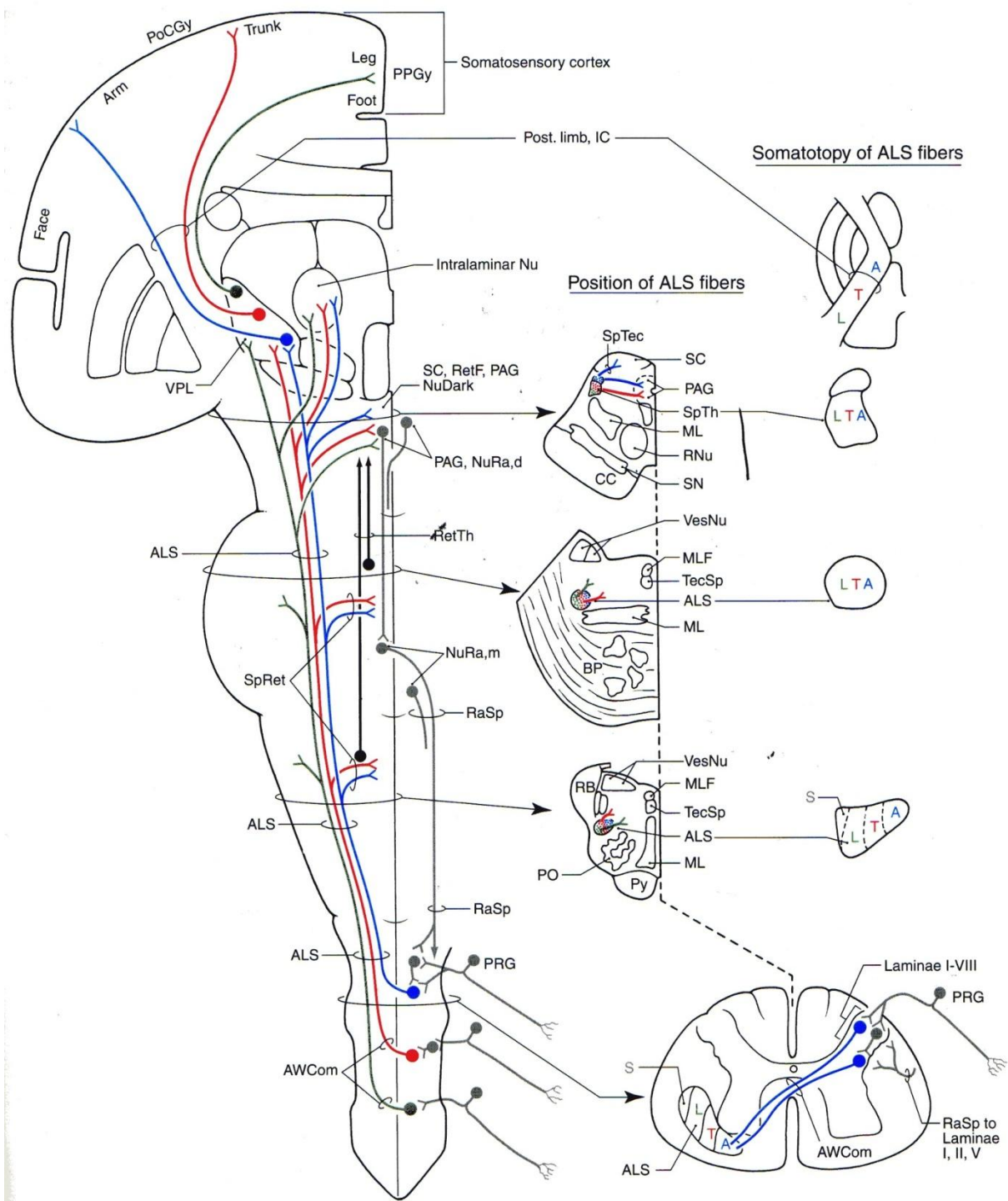


FIGURE 1.9 Anterolateral nociceptive pathway. (Copyright J.M. True, D.C.)

- Note the legs stay lateral all the way up to the thalamus
- Note the rotation in the laminar distribution of the thalamocortical fibers as information travels to the homunculus



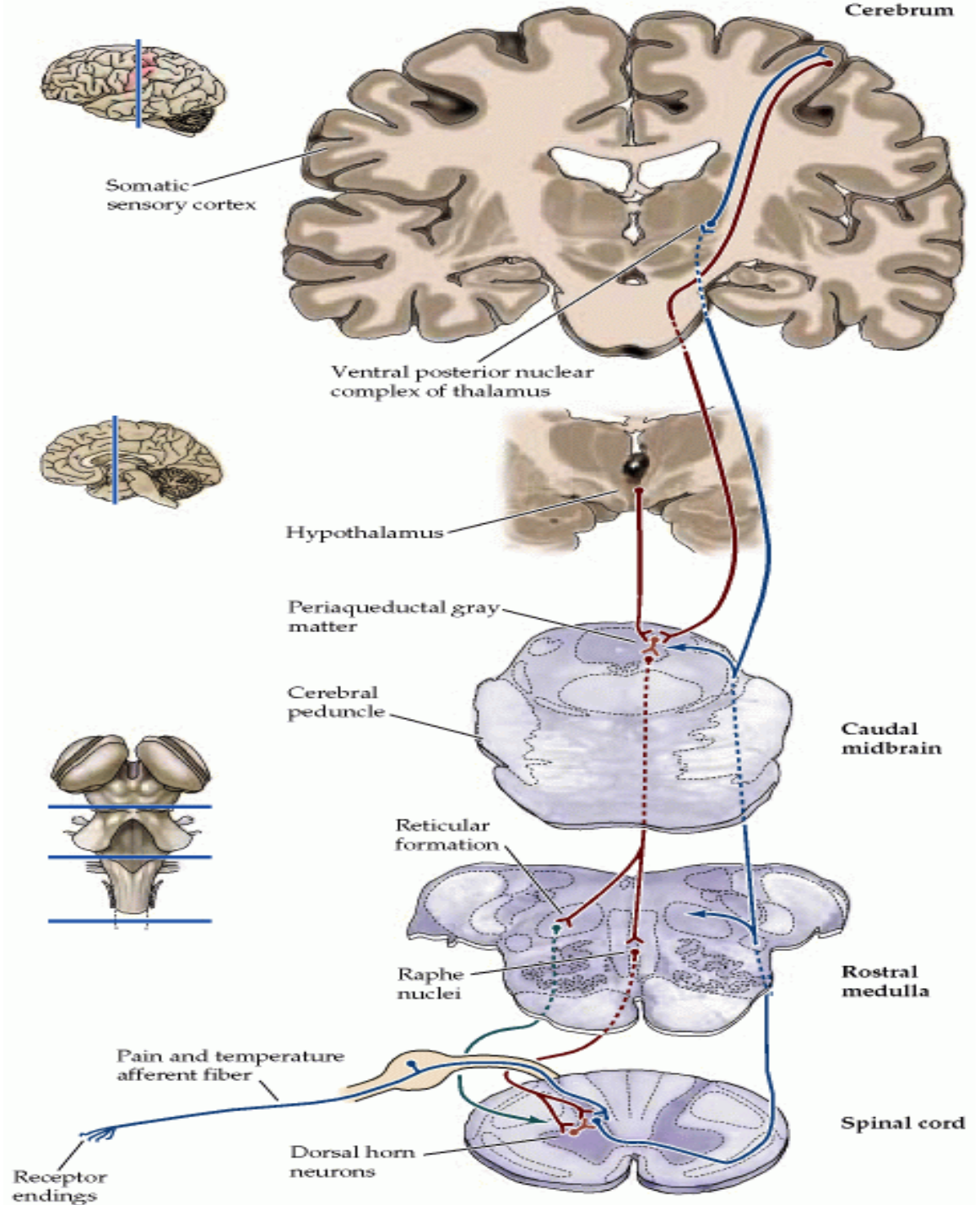
Spinothalamic Tract (AKA Anterolateral System)

- According to Kandel, Schwartz, & Jessell, pain ascends in the ALS via 5 ways:
 1. Spinothalamic (to the VPL)
 2. Spinoreticular (to the reticular formation)
 3. Spinomesencephalic (to the PAG)
 4. Cervicothalamic
 5. Spinohypothalamic

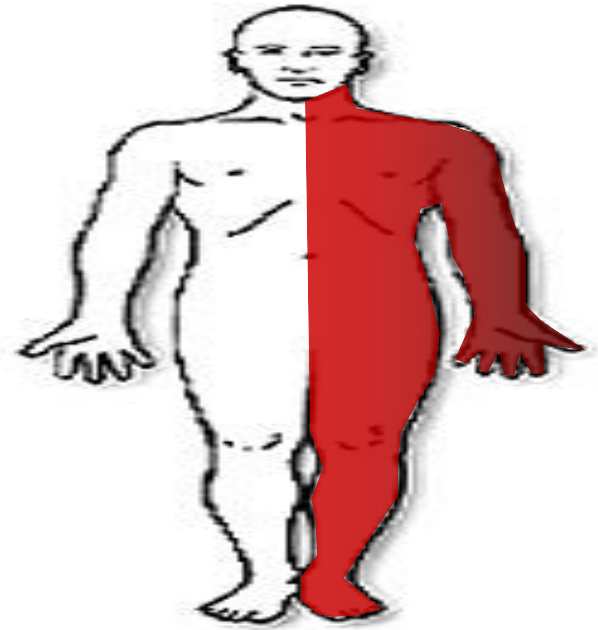
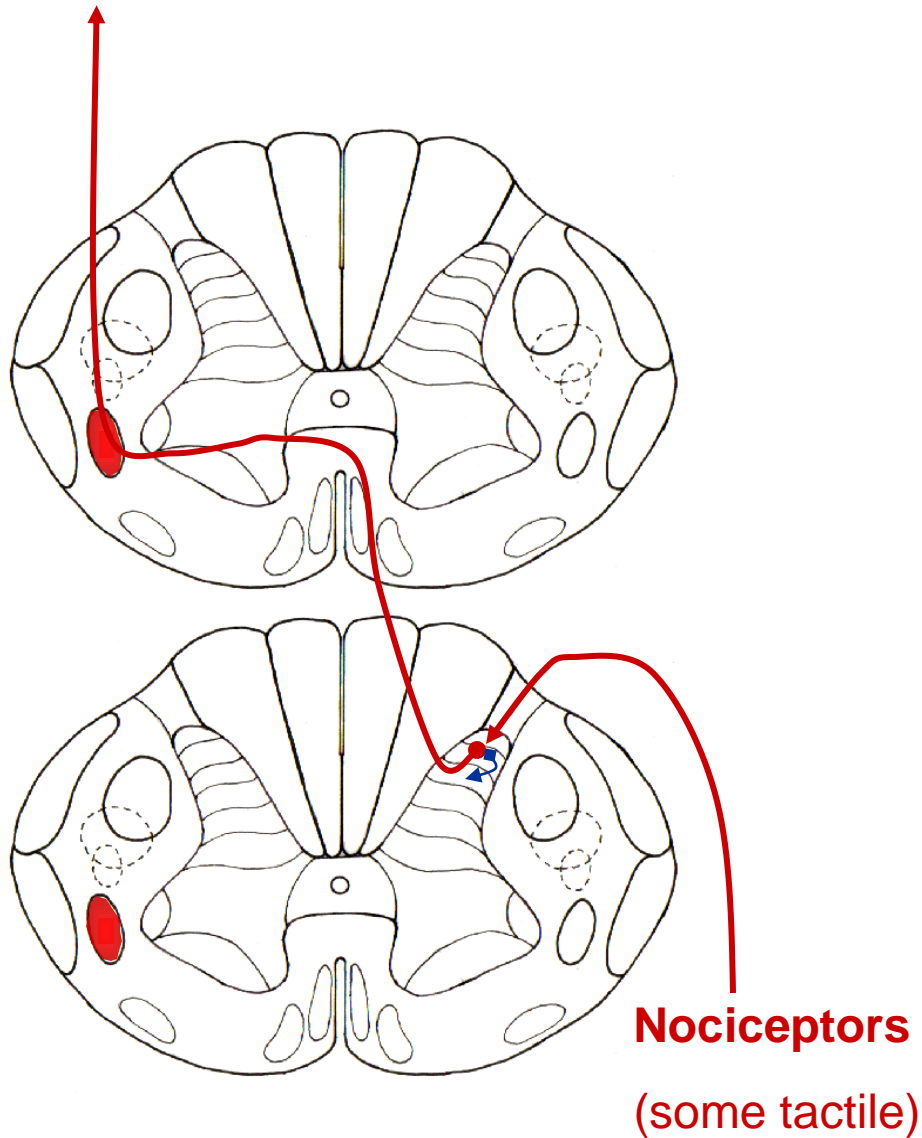
Spinothalamic Tract (AKA Anterolateral System)

- 70% of all ALS inputs terminate in the Periaquiductal Grey (PAG)
 - Fire to the Ascending Reticular Activating System (ARAS) to wake you up.
 - Fire descending projections to rostral nucleus to integrate w/ raphae Nu
 - Nucleus raphae magnus is the source of descending serotonin projections to the cord - raphaespinal
 - This is the primary thing that inhibits the dorsal horn – part of the descending reticulospinal system
 - Fires down to further excite the GABAergic pool that was excited by LDAs to inhibit the SDAs

Descending pain modulation – *Neuroscience Textbook*



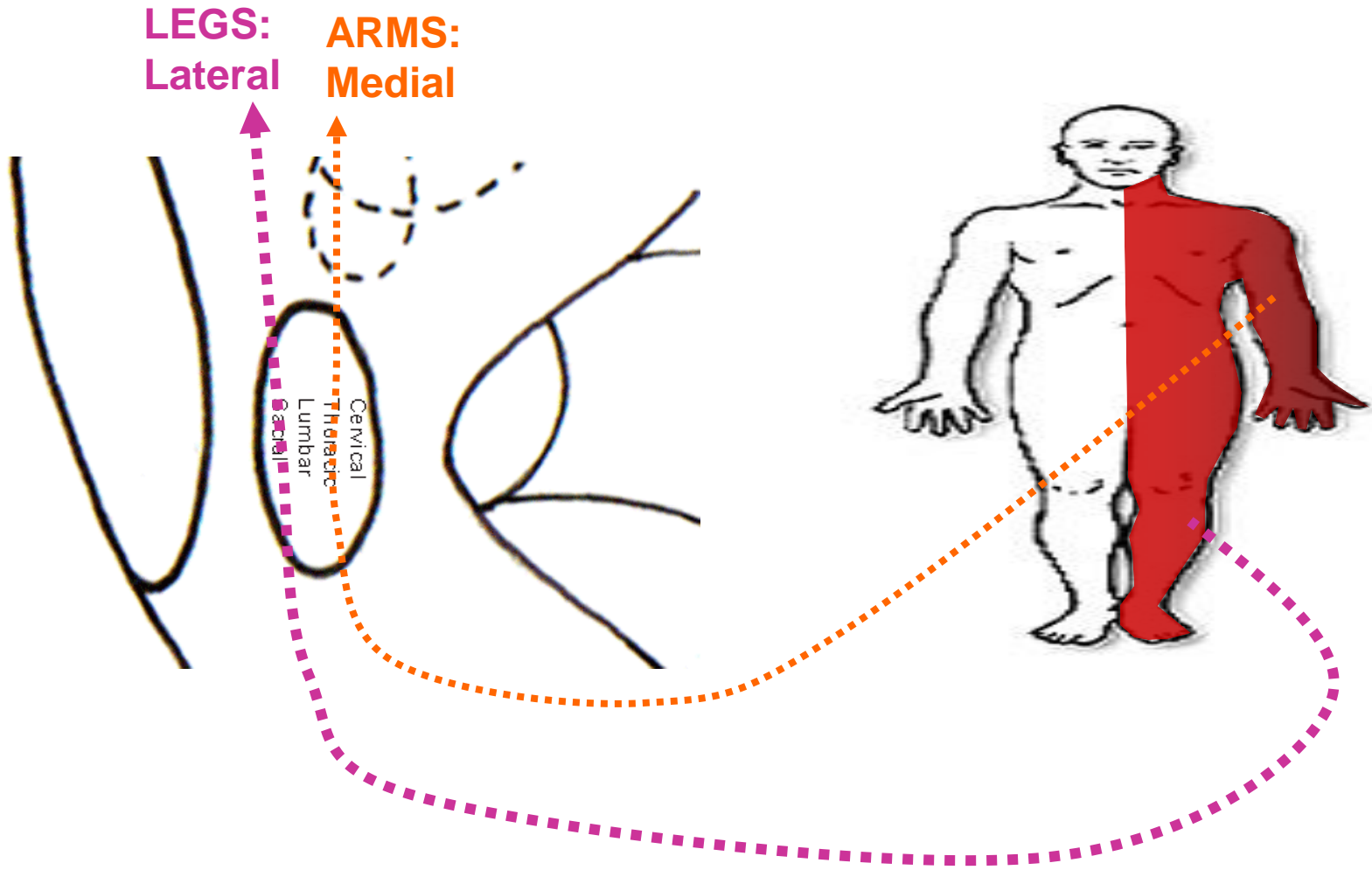
Spinothalamic Tract



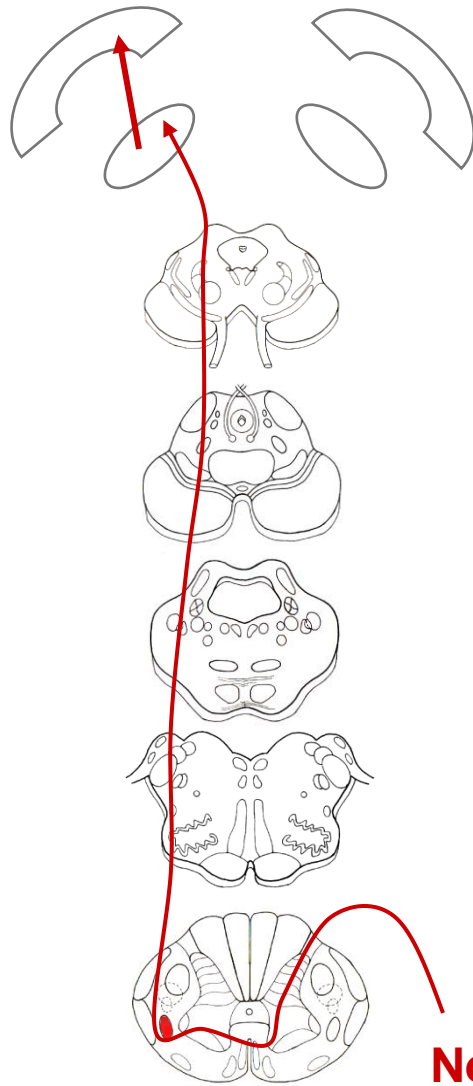
Spinothalamic Tract:

1. Synapse in **Substantia Gelatinosa**
2. Ascends and decussates in 2-3 segments

Spinothalamic Tract: Laminar Distribution



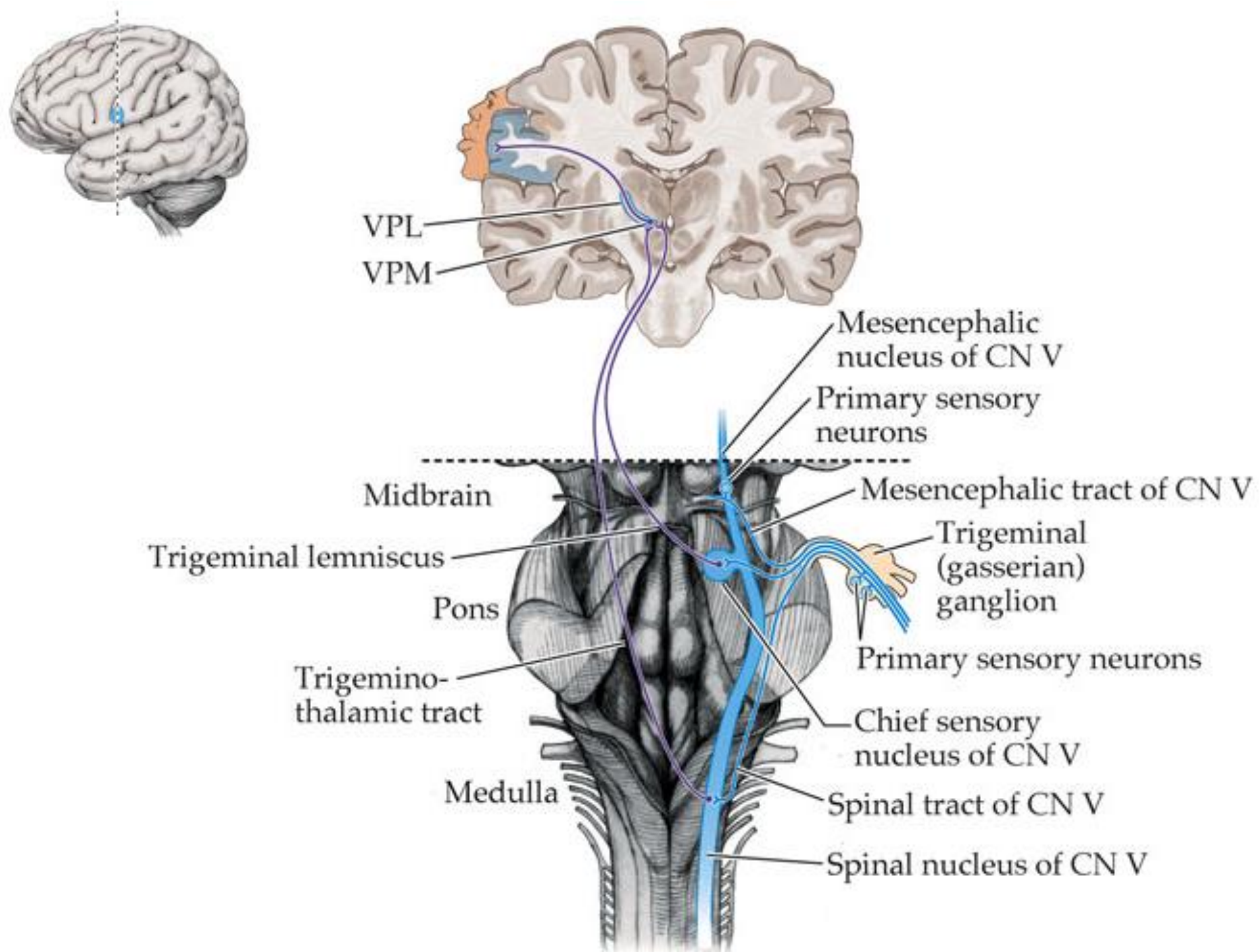
Spinothalamic Tract: Laminar Distribution



- Fibers decussate and travel 2-3 segments before joining the Spinothalamic tract.
- Collaterals join Substantia gelatinosa and PAG.

Nociceptors
(some tactile)

Cranial Nerve five (Trigeminal Nerve)



Pict

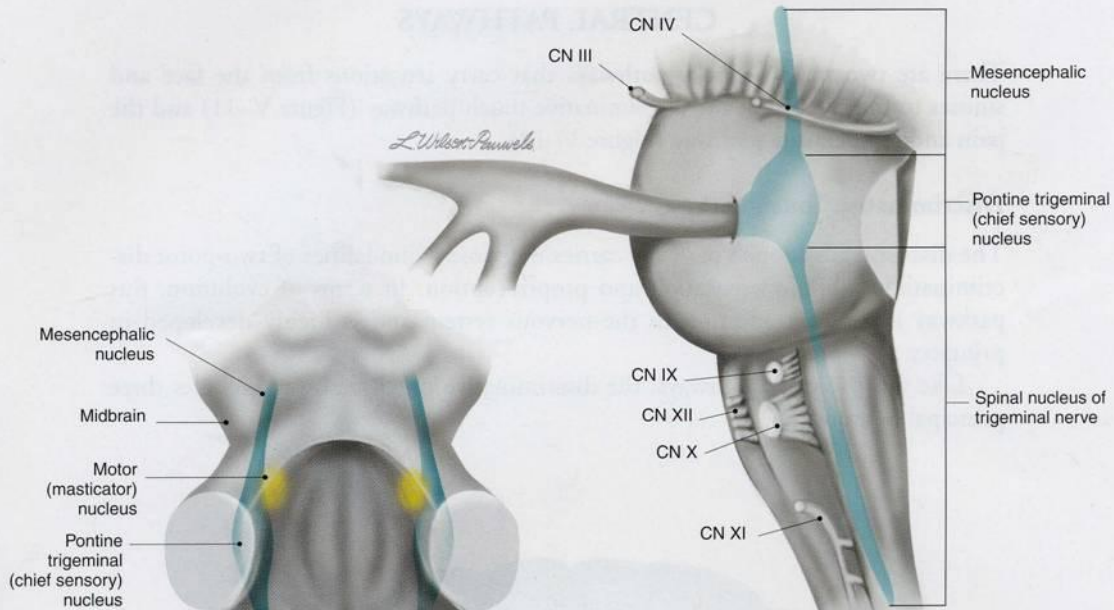


Figure V-9 Trigeminal sensory nucleus (lateral view of the brain stem).

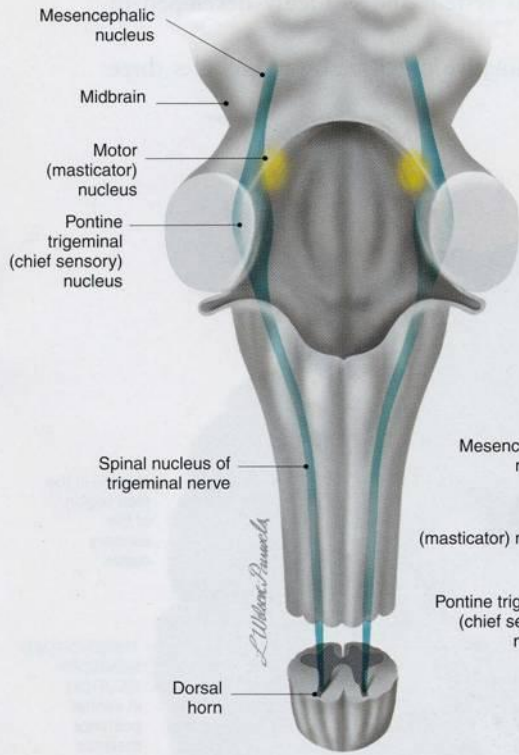


Figure V-8 Trigeminal nuclei (dorsal view of the brain stem).

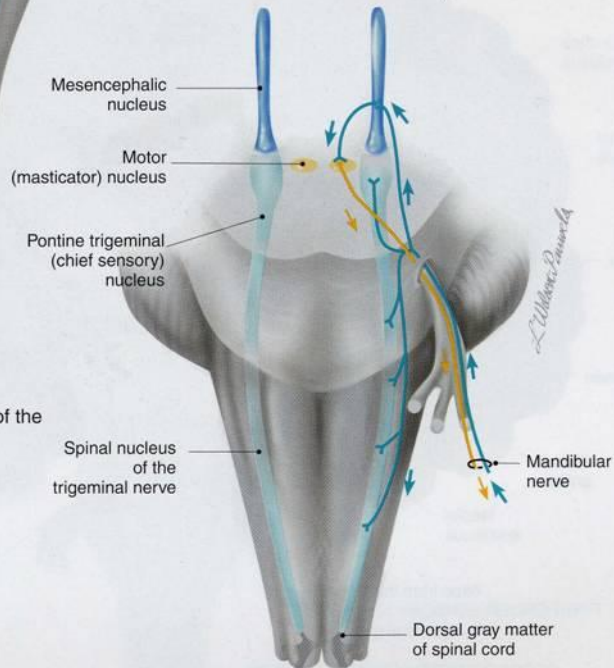
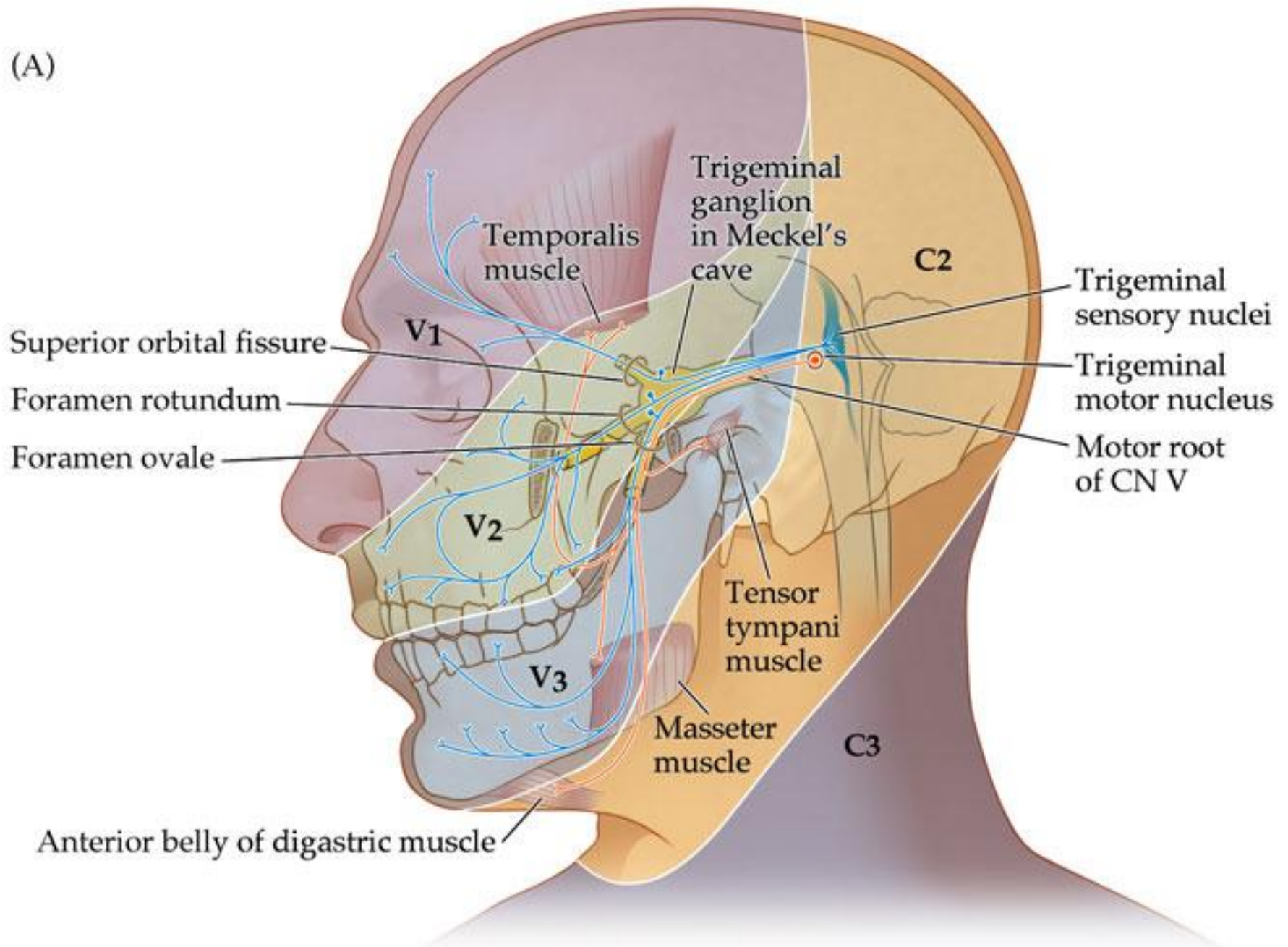


Figure V-10 Trigeminal nucleus showing sensory/motor reflex (ventral view of the brain stem).

(A)



Picture

The sensory components of the short ciliary nerves pass through the ciliary ganglion without synapsing.

Proprioceptive sensory axons from the extraocular muscles travel initially with cranial nerves III, IV, & VI – but then leave them to join the ophthalmic division as it courses through the cavernous sinus

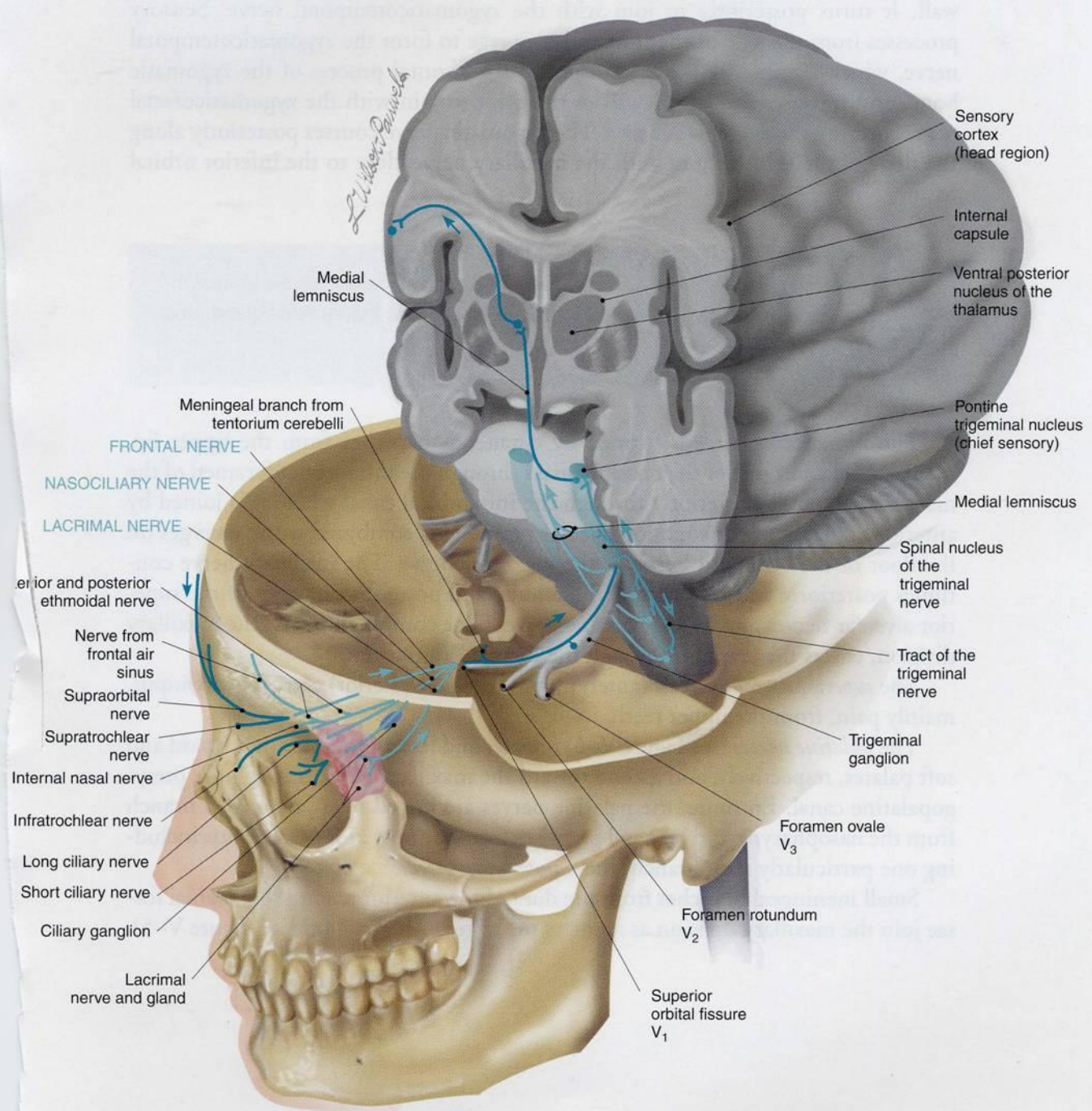
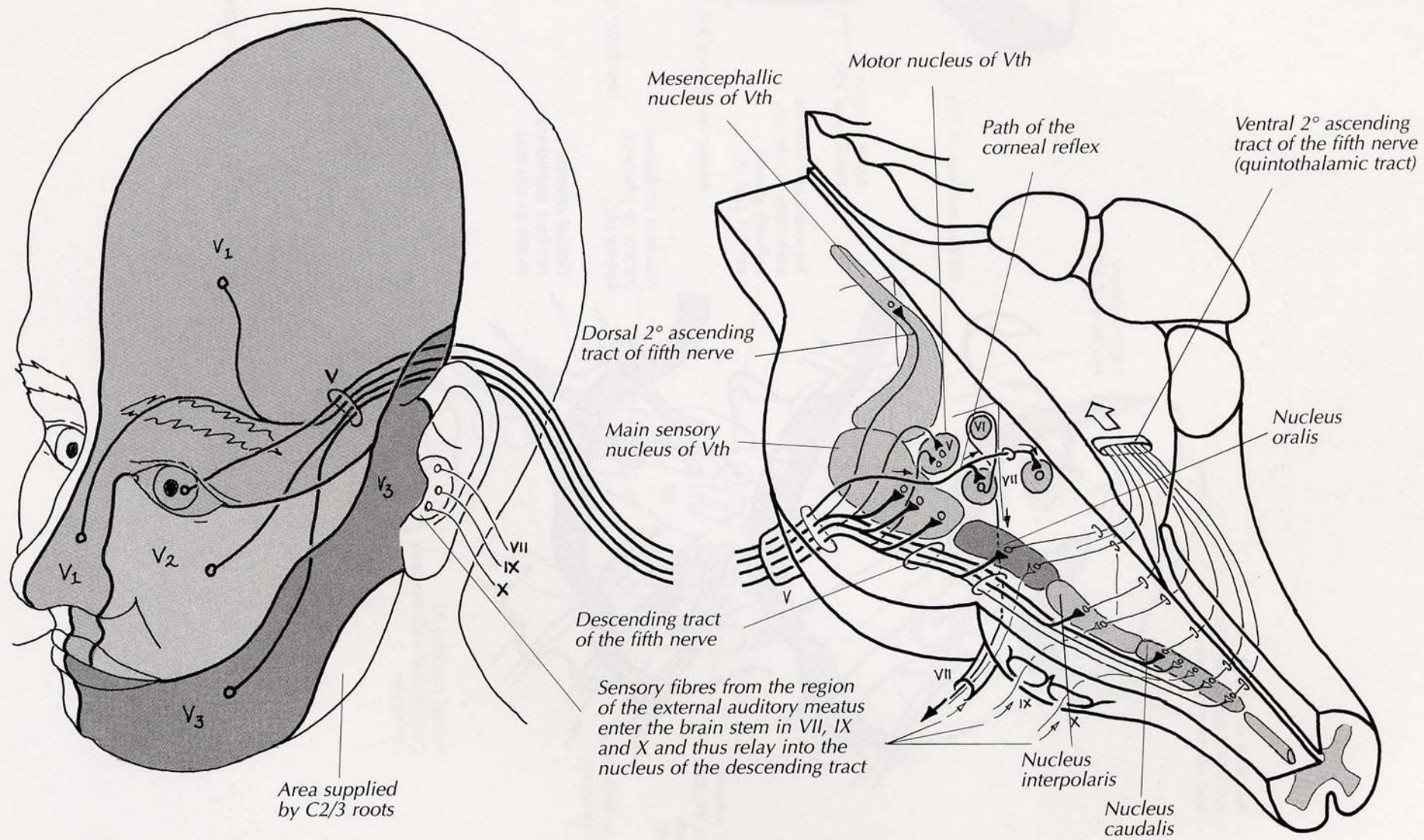


Figure V-4 General sensory component of the trigeminal nerve, ophthalmic V₁ division.



11.9 Trigeminal sensory pathways and sensory supply to the face.

The sensory areas of the face are laminated in a forwards direction quite different from the vertical ophthalmic, maxillary and mandibular distribution of the peripheral branches of the trigeminal nerve

Trigeminal

- The discriminative touch pathway carries the sensation of vibration and two point touch discrimination from the sinuses and the face. It includes three principle neurons.
- The first order neurons carry information from a specific region of the face or meninges to the pontine trigeminal nucleus.
- Axons from here cross the midline and ascend up to the thalamus via the medial lemniscus to the ventral posterior thalamic nucleus. From here the axons travel to the primary sensory cortex.
- The pain and temperature pathways travel differently. This pathway carries the aforementioned modalities. In addition the pathways aid in activation of the limbic system and activation of the fight or flight response that may be the appropriate response to pain.

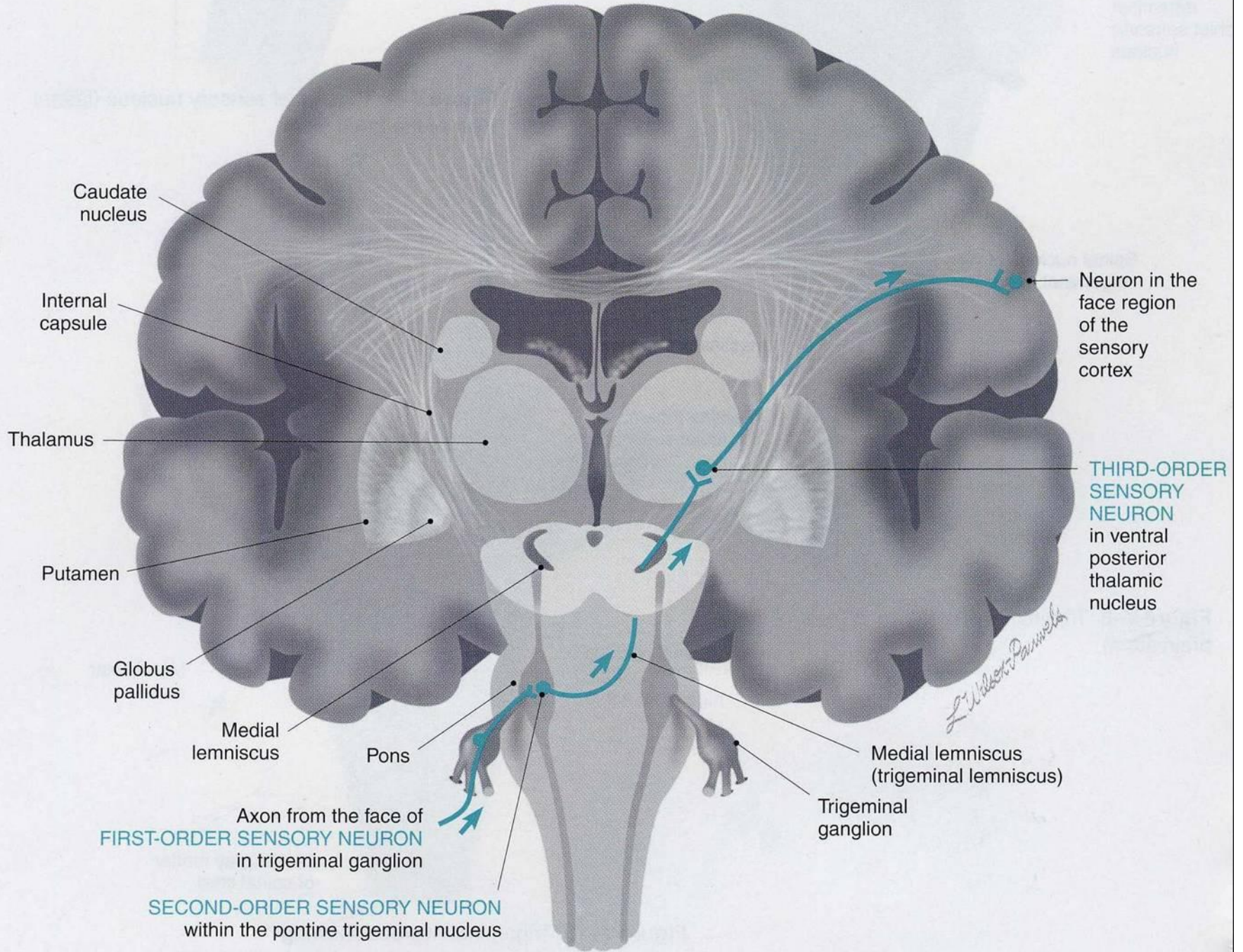


Figure V-11 The discriminative touch pathway from the head (see Clinical Testing).

L Wilson Daniels

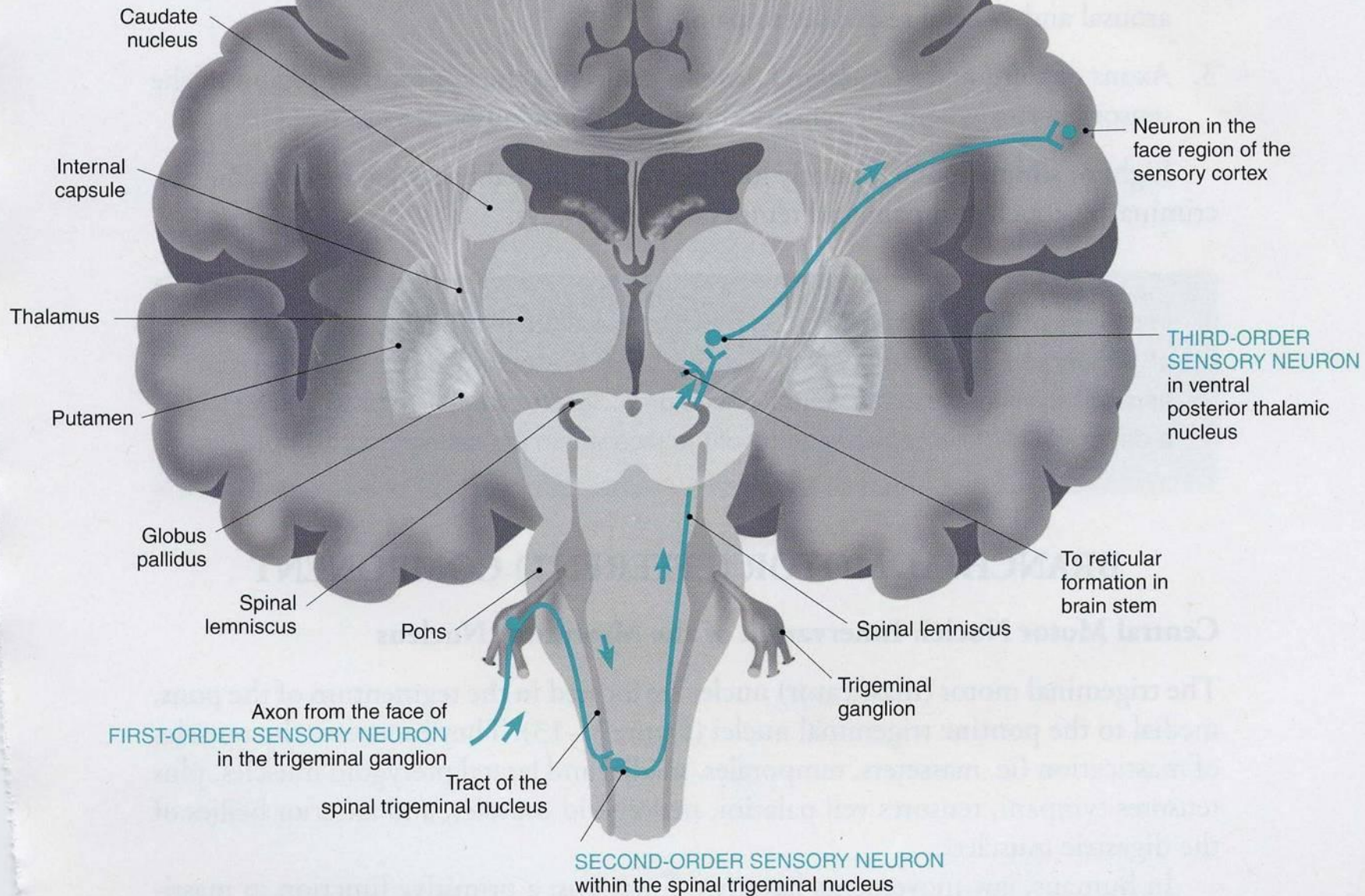
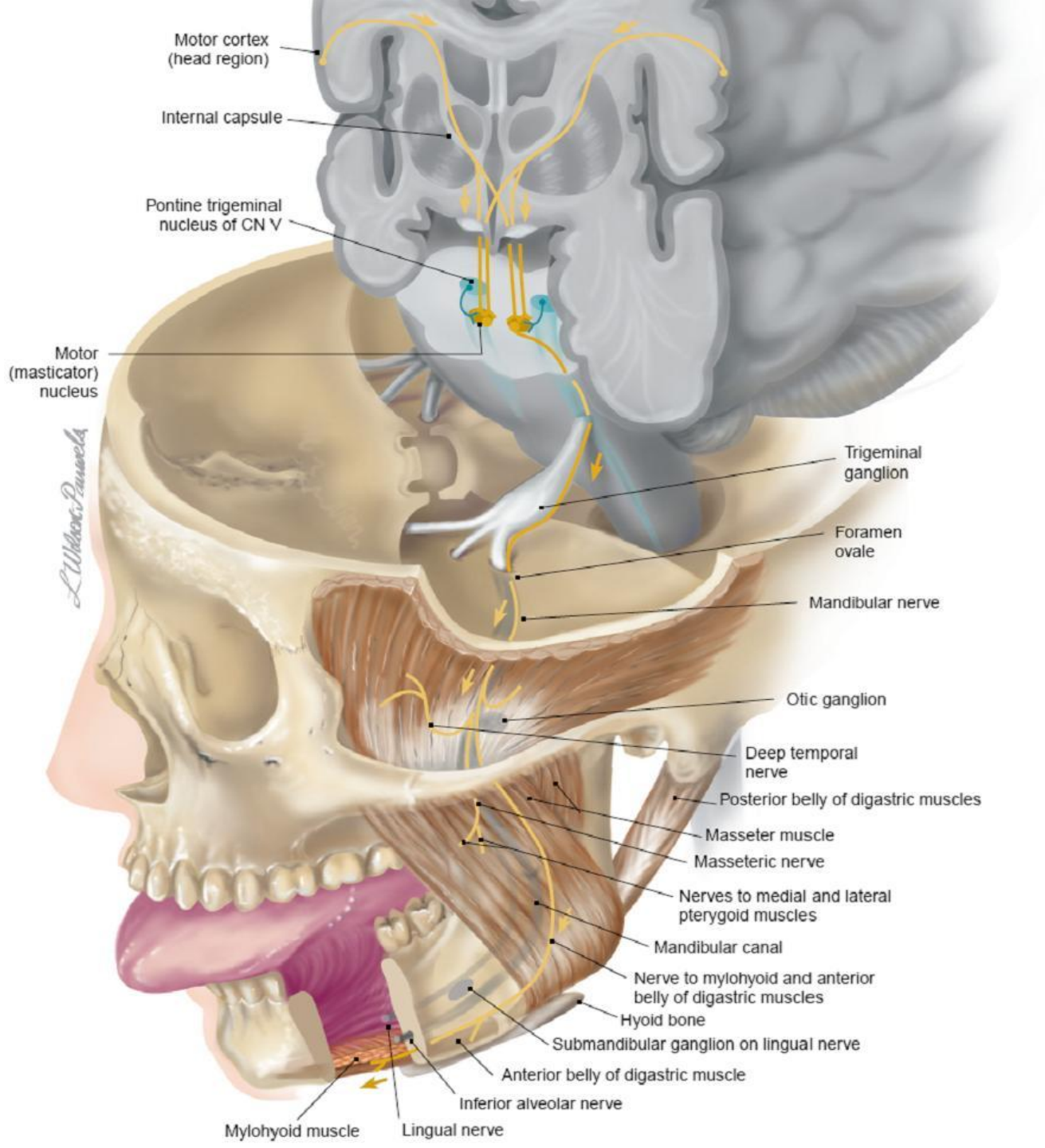
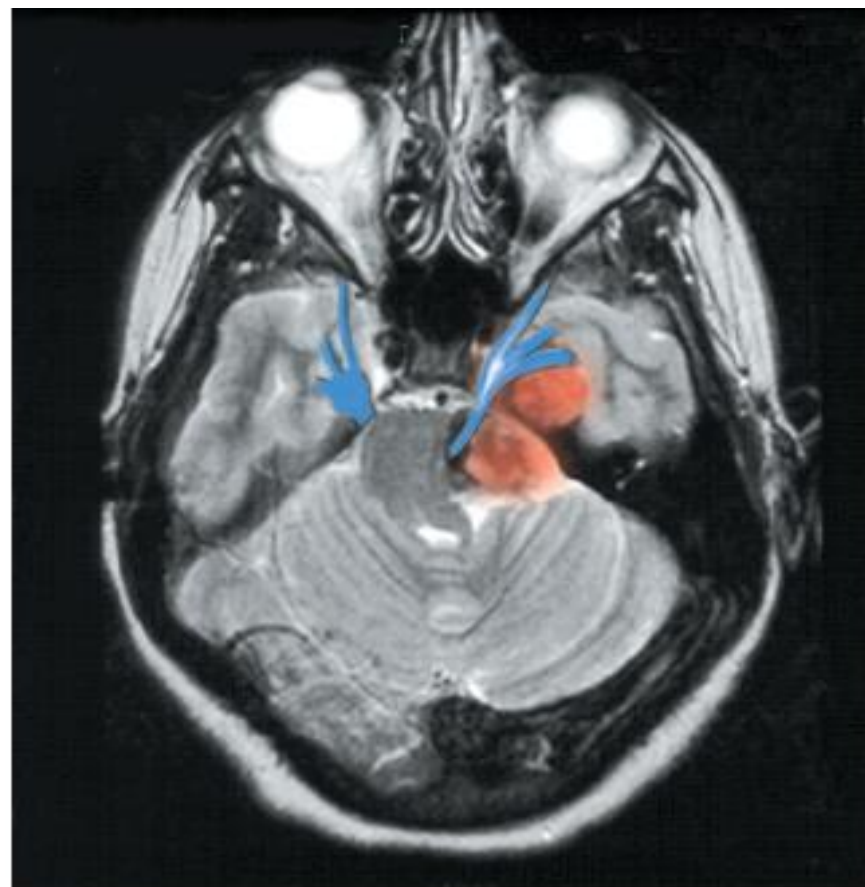


figure V-12 Pain and temperature pathway from the head (see Clinical Testing).



Trigeminal conditions

- Trigeminal neuralgia or tic douloureux can occur in which there is severe lancinating pain that zaps through one or more divisions in the trigeminal system and is typically created from chewing, talking, touching, or other forms of stimulation to the area.
- Damage can occur in the brainstem to cause compression of the trigeminal system. These lesions include meningioma, herpetic infections, ischemia and schwannomas.



A

B

Figure V-15 Mary's MRI showed a meningioma growing on her left petrous temporal ridge. The tumor is pressing on her pons at the entry of the trigeminal nerve. *A*, MRI scan. *B*, The tumor has been artificially colored (*red*) and representations of the positions of the trigeminal nerves have been ghosted in to show that the left trigeminal nerve (*blue*) would be compressed by the meningioma. (Image courtesy of Dr. David Mikulis.)

Chemical side of pain

- Inflammation: Prostaglandin
- 불포화지방산(Essential Fatty Acids Supplementation) (염증 조절)
- Aspirin, acetoaminophen, NSAIDs
- 이것이 weak muscle을 강하게 하면 inflammation 의심하고 fat metabolism 개선

Omega terminology

CH₃.....COOH

Methyl end

Carboxyl end

omega(ω) end

Delta end

- Linoleic acid(18:2:w-6)
- EPA (20:5:w-3)
- = double bond 의 중요성: break down 되어서 다른 물질로 변화 가능성이 있다.
Hormone 대사 등에서.

- LA=linoleic acid()
- GLA=gamma linoleic acid(black currant seed oil, evening primrose oil, borage oil)
- DGLA=dihomogammalinolenic acid(PG1)
- AA=arachidonic acid(, , : PG2)
- ALA=alpha linolenic acid(, linseed oil, canola oil)
- EPA=eicosapentaenoic acid(: PG3)

Metabolism of fats (lipid)

Type of Fat	Omega-6	Saturated	Omega-3
Food source	Most vegetable oil	Animal fat: meat, dairy, eggs, shellfish	Fish, beans, flaxseed oil, canola oil
1 st fatty acid	Linoleic acid (LA)	Arachidonic acid (AA)	Alpha-linolenic acid (ALA)
2 nd fatty acid	Gamma linolenic acid (GLA)	AA	Eicosapentanoic acid (EPA)
Prostaglandin	PG1	PG2	PG3

Body's reaction	Anti-inflammatory Decreased clotting Vasodilation Carbohydrate sensitivity	Inflammatory Increased clotting Vasoconstriction Carbohydrate sensitivity	Anti-inflammatory Decreased clotting Vasodilation
Stimulated by	Moderate alcohol Niacin, B6, Mg, low dose of vit E(<400IU), aerobic exercise	Non	Vit C, low dose of vit E(<400IU), EPA, B6, Mg
Inhibited by	Transfat, saturated fats, aspirin(NSAIDs) Aspartame, steroid, High dose of alcohol, food additives , high dose of vit E(>400 IU)	EPA, aspirin(NSAIDs) High dose of alcohol, high dose of vit E(>400 IU)	Transfat, saturated fats, aspirin(NSAIDs) Aspartame, steroid, High dose of alcohol, food additives , high dose of vit E(>400 IU)
Nutrition	Black currant, primrose, borage, wheat germ oil	Non	Fish oil, EPA, flaxseed oil, linseed, walnut, sesame seed oil
Cofactors	B6, Niacin, vit C, low dose of vit E, calcium, Mg, zinc		

Function of PG

- cause constriction or dilation in vascular smooth muscle cells
- cause aggregation or disaggregation of platelets
- sensitize spinal neurons to pain
- decrease intraocular pressure
- regulate inflammatory mediation
- regulate calcium movement
- control hormone regulation
- control cell growth
- acts on thermoregulatory center of hypothalamus to produce fever
- acts on mesangial cells in the glomerulus of the kidney to increase Glomerular filtration rate

The Arachidonic Acid Cascade

Arachidonic acid

Stimulants:
lipoxygenase
Aspirin
Steroid

Inhibits:
E(high
dose)
EPA, Zinc,
Quercitin
Glutathione
Aloe
selenium

Stimulates:
cyclooxygenase
Dairy, estrogen,
Vit C, B6

Inhibits:
EPA,
Aspirin,
NSAID

Leukotrienes

PG2 series &
Thromboxanes

Stimulates:
Ginger, garlic,
Oinon, Mg

Inhibits:
Hydroxyl
free radical

prostacycline

NASIDs의 부작용

-
- leaky gut
- C
- antagonize
- leukotrienes enhance
- sulphur (2)
- proteoglycan 합성 방해 (cartilage repair)

NSAIDs

1. ESSENTIAL FATTY ACIDS AND COFACTORS

A. PG1

1. BLACK CURRANT SEED OIL
2. BORAGE OIL
3. EVENING PRIMROSE OIL

B. PG3

1. FLAXSEED OIL (LINSEED OIL)
2. FISH OILS (EPA – EICOSAPENTAENOIC ACID, DHA)

C.

1. B-6 (P-5-P)
2. MAGNESIUM
3. ZINC
4. NIACIN

2. NSAIDs Herbal

1. BOSWELLIA 2. TUMERIC

- 2. DIETARY CHANGES
 - A. AVOID PARTIALLY HYDROGENATED FATS
 - B. DECREASE SATURATED FAT INTAKE

TO TREAT LEUKOTRIENE PROBLEMS

NOTE: LEUKOTRIENES ARE 100 - 1000 TIMES AS INFLAMMATORY AS HISTAMINE

1. EFA PG1 & PG3 PRECURSORS (SEE ABOVE)

2. COFACTORS (SEE ABOVE)

3. PROSTACYCLIN STIMULATION

A. GINGER

C. ONIONS

B. GARLIC

D. MAGNESIUM

4. LT INHIBITION

A. VITAMIN E (HIGH DOSE)

E. GLUTATHIONE

B. EPA

F. SELENIUM

C. ZINC

G. ALOE

D. QUERCITIN

ASPIRIN / NSAIDs CHALLENGE TEST

- CHALLENGE WITH ASPIRIN / NSAIDs(weak muscle):
 1. STRENGTHENS - PG PROBLEM
 2. WEAKENS – LEUKOTRIENE PROBLEM

Inflammatone



- Enzymes™ proprietary blend 222 mg
 - Protease 6.0 (concentrate) 50,000 HUT
 - Protease 4.5 40,000 HUT
 - Trypsin 1:150 25 mg
 - Serrazimes™ 10,000 U
 - Chymotrypsin 2 USP Units
- **Turmeric** (*Curcuma longa*) (root)
[standardized to contain 95% Curcumin] 200 mg
- **Boswellia** (*Boswellia serrata*) (resin)
[standardized to contain 60% Boswellic acid] 200 mg
- **Ginger** (*Zingiber officinale*) (root)
[standardized to contain 5% Gingerols] 200 mg
- **Quercetin** 75mg
Rutin 75mg
- **Rosemary** (*Rosmarinus officinalis*) (aerial) 50 mg
- **Resveratrol** (*Polygonum cuspidatum*) (root)
[standardized to contain 20% Resveratrol] 3 mg

Arthrosoothe



- Vitamin B3 (as Niacinamide) 500 mg
Zinc (Zinc Chelazome® Bis-Glycinate Chelate) 10 mg
Selenium (as Selenomethionine) 100 mcg
Copper (as Copper Chelazome® Bis-Glycinate Chelate) 1 mg
Manganese (as Manganese Chelazone® Bis-Glycinate Chelate) 1 mg
Glucosamine Sulfate 1,000 mg
Methylsulfonylmethane (MSM) 750 mg
N-Acetyl L-Cysteine (NAC) 200 mg
Glycomarine™ (Green Lipped Mussel) 100 mg
Boswellia (Boswellia serrata) (resin) [standardized to contain 60% Boswellic Acid] 75 mg
Turmeric (Curcuma longa) [standardized to contain 95% Curcuminoids] 75 mg
Cetyl Myristoleate 50 mg
Hyaluronic Acid 20 mg
Polygonum cupidatum(root) [standardized to contain 50% trans-resveratrol] 20mg
Collagen II 2 mg

Detox Antiox



- Vitamin C (Ascorbic Acid) 500 mg
Vitamin E 47 IU
(d-gamma tocopherol 90 mg; d-delta tocopherol 37.5mg; d-alpha tocopherol 20mg; d-beta tocopherol 2.5mg) Biotin (as d-Biotin) 150 mcg
Zinc (as Monomethionine) 15 mg
Selenium (as Selenomethionine) 100 mcg
Manganese (as Manganese Chelazome Bis-Glycinate Chelate) 3 mg
Molybdenum (as Molybdenum Bis-Glycinate Chelate) 100 mcg
N-Acetyl-Cysteine (NAC) 250 mg
Leucine 150 mg
Alpha Lipoic Acid 90 mg
Green Tea (*Camellia sinensis*)[standardized to contain 50% EGCg; 90% Polyphenols] 50mg
Turmeric Acid (*Curcuma longa*) (root)
[standardized to contain 95% curcuminoids] 50mg
Leucoselect® Phytosome® Grape Seed Extract (*Vitis vinifera*) 50 mg
(oligomeric proanthocyanidins from grape seeds complexed with phosphatidylcholine)

Omega-3, 6 (Omega Synergy)



ALA 414 mg
EPA (from Deep
Sea Fish Oil) 240
mg
DHA (from Deep
Sea Fish Oil) 160
mg
GLA 152 mg
Vitamin E (Mixed
Tocopherols) 20 IU

Arctic Omega(Nordic Natural)



- EPA: 330 mg
- DHA: 220 mg
- Other Omega-3s: 140 mg
- Vitamin E: 30 IU

아이들용 씹어서 먹을 수 있게



- DHA: 125 mg
- EPA: 82 mg
- Other Omega 3s: 45mg
- Total Omega 3s: 252mg
- Oleic Acid (Omega 9): 120
- Vitamin A: 130-300 IU
- Vitamin D: 1-4 IU
- Vitamin E: 14 IU

4가지 통증 치료법

- 손상회상법(Injury Recall Technique)
- 통각자극 차단법(Nociceptor stimulation blocking NSB, Immediate pain relief, IPR)
- 접촉과 두드림(Set Point ,Touch and Tap)
- , , LQM

대한 (IRT, Injury Recall Technique)

- Gordon Bronston to Schmitt
- Robert Crotty
-
- (Poorly podiatric
surgery result)
- (the
number of significant previous
injury)
- (Injury accumulation)

- **Talus() –no muscle attachment –only one in the body.**

- **–talus is jammed into the ankle mortise**

- **–micromanipulation of talus muscle pain, muscle tension .**

- **(postural adaptation to the injury)**

기전

- adaptation
- Muscle neurological memory of injury . 20-30 . -changes of muscle balance
- Incredible technique to perform – dramatic effect to the patient
- 손상회상법은 손상과 외상의 병력에 근거를 두고 있다

목과 머리의 손상시의 IRT기전

- 목과 머리를 신전시킨 상태에서 손상을 받았던 부위에 손을 대면 손상 당시의 상태로 다시 **REACTIVATION** 신경계를 재활성화한다.
- 그러면 강한 근육이 약해짐

목과 머리 이외의 부위 검사 치료방법

- **족관절:** 환자가 손상을 받았던 부위에 접촉을 하거나, 의사가 꼬집거나, 차가운 스프레이를 뿌리고 나서 즉시 거골을 상방으로 약하게 밀어 올린다. 만일 강한 지표근육이 이러한 조작으로 약해지면 손상회상법의 적용이 되는 것이다. 치료는 족관절 격자와 거골 사이를 약하게 수기치료(약하게 신장)하는 것이다.

목과 머리 손상시 방법

- 목과 경추의 손상은 상부경추와 후두부를 굴곡시키는 수기치료를 한다.
- 손상을 받은 부위를 환자가 손으로 접촉하거나, 의사가 꼬집거나, 차가운 스프레이를 뿌리고 나서 환자는 목을 신전시킨다. 만일 강한 근육이 이러한 동작으로 약해지면 위의 수기치료를 한다.

•

reflex

•

startle

•

손상 부위

머리와 목: 목을 IRT교정
기타 그 외의 부위: 발목을
IRT교정

방법

- 발목관절: 환자가 손상을 받았던 부위에 접촉을 하거나, 의사가 꼬집거나, 차가운 스프레이를 뿌리고 나서 즉시 목말뼈를 상방으로 약하게 밀어 올린다. 만일 강한 지표근육이 이러한 조작으로 약해지면 손상회상법의 적용이 되는 것이다. 치료는 발목관절흡과 목말뼈사이를 약하게 수기치료(약하게 신장)하는 것이다.

방법

- 목과 목뼈의 손상은 상부목뼈와 뒤통수를 굴곡시키는 수기치료를 한다.
- 손상을 받은 부위를 환자가 손으로 접촉하거나, 의사가 꼬집거나, 차가운 스프레이를 뿌리고 나서 환자는 목을 뒤로 젖힌다. 만일 강한 근육이 이러한 동작으로 약해지면 위의 수기치료를 한다.

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startle reflex

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기시종지 테크닉 (Origin Insertion Technique)

- 큰 손상 혹은 반복된 작은 손상(major injury or repetitive microinjury)에 따라서 근육과 힘줄이 만나는 곳 혹은 힘줄이 뼈에 붙는 곳(musculotendinous junction or tendoperiosteal region)에 fiber가 손가락 깎지 끼듯이 꼭 물려야 되는데, 그렇지 못하고 느슨하게 된다
- IRT를 Origin Insertion Technique 혹은 GTO manipulation technique에 첨가해서 좀 더 advance된 형태로 치료.

근방추의 활동을 이용한 것

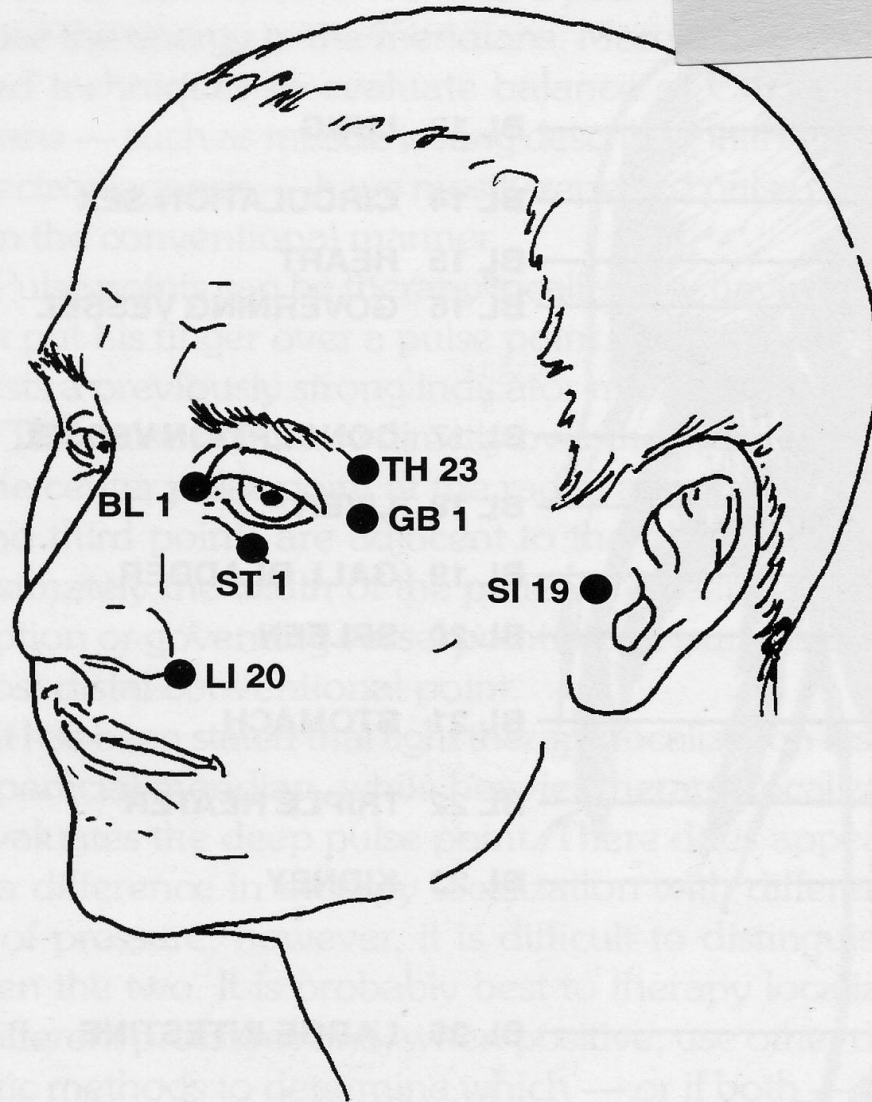
Muscle spindle cell activity

- 근방추를 신장시켜서 약한 근육이 강해 지지 (AF) 않으면, 손상회상법 (IRT) 사용. 손상부위를 문지르면 약한 근육이 강해짐
- 반대로 만일 근방추를 억제(이완)시켜도 약해 지지 않으면 (Facilitation), 이 근육을 지표근육으로 사용하지 못한다.

- 손상이 심하면 nociception이 polysynaptic pathway를 거쳐서 앞뿔세포(전각세포)를 억제함.
- 어느 정도의 손상이면 굴곡근, 신전근 등 모든 두 splinting(monosynaptic excitation)하지만, 손상의 정도가 심해지면 위와 같이 앞뿔세포를 억제함. 심하게 다치는 경우 스포츠에서 종종 볼 수 있다.
- 최근의 외상이거나, 오래 된 외상거나 IRT가 나타나는 것은 근방주의 반사가 없어진(disruption)된 상태임. 그래서 AF이 나타나지 않는다.
- 다시 말하면 Normal muscle spindle feedback이 생기지않는다.

통각유발 차단법(nociceptor
stimulation blocking NSB
technique)

접촉하면서 두드림(Set point (touch
& tap) technique)



7—27. Yang beginning and ending points on the head.

통각유발 차단법 (nociceptor stimulation blocking NSB technique)

- 급성통증 조절에 사용
- 전신적인 근육의 약화가 생김
 - 급성통증
 - 통증부위를 압박할 때
 - 관절을 아픈 자세로 만들 때
- 머리의 시작 종지 경혈에 접촉검사를 해서 약해진 머근육이 강해지면, 손상부위에 압박을 하면서 그 경혈점을 두드린다.
- 통증이 없어질 때까지 한다.
- 압박을 해도 더 이상 지표근육이 약해지지 않을 때까지 한다.

접촉하면서 두드림(Set point (touch & tap) technique)

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통각의 위치, 정도, 기억을 이용한
치료법(location, quality, memory,
LQM technique)

Thalamocortical projections of nociception 통각의 시상-대뇌피질 전달

1. sensory cortex
 - a. somatosensory cortex
 - b. visceral sensory cortex
2. limbic system ,
temporal lobe 측두엽, 관자엽

통각과 관련된 대뇌

- **sensory cortex**
 - localization of pain
 - qualitative nature of pain
- **limbic system**
 - emotional experience which is pain

Temporal lobe 판사엽, 측두엽

- Memory of pain
 - Short term
Medial temporal gyri
 - Long term
Inferior temporal gyri

Accessing somatosensory cerebral cortex (location of pain)

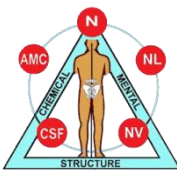
1. focus on area of pain
2. if weakness: patient TLs head points, one head point negates weakness.
3. patient continue to focus
tap head point 50-100 times

Accessing somatosensory cerebral cortex(quality of pain) ?

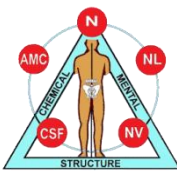
1. focus on quality of pain
2. if weaknes: patient TLs head points, one head point negates weakness.
3. patient continue to focus
tap head point 50-100 times
앞에서와 같은 방식으로 진행

accessing temporal lobe (memory of pain)

1. focus on memory of pain at its worst incident when pain began
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2. if weakens: patient TLs head points
one head point negates weakness
3. patient continues to focus
tap head points 50-100 times



족부 교정용 깔창



01 족부 교정의 필요성

02 신발의 선택

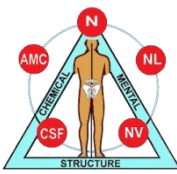
03 깔창 제작 방법

04 족부 재활 치료

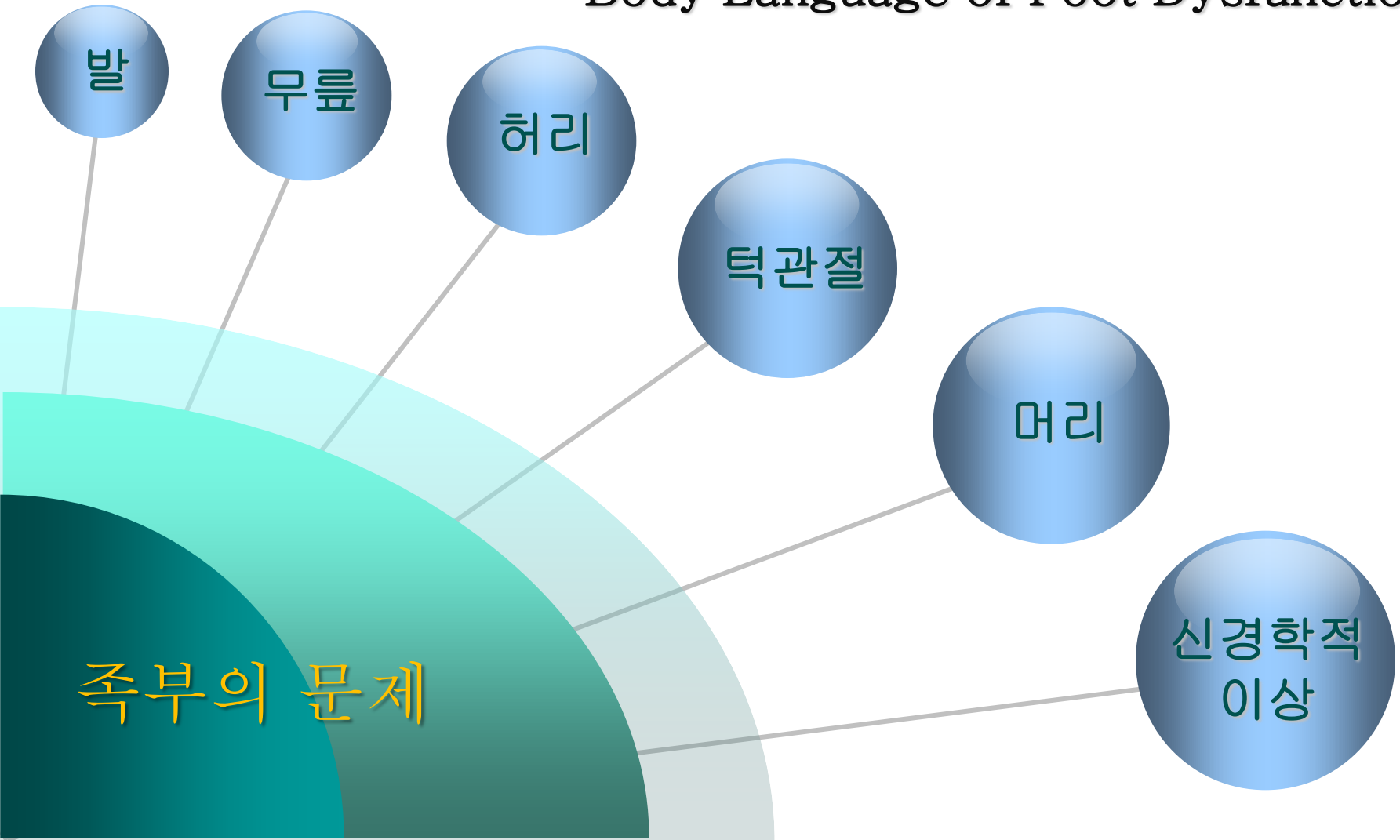
05 깔창 제작 후 관리

06 족부 교정시 병행 치료

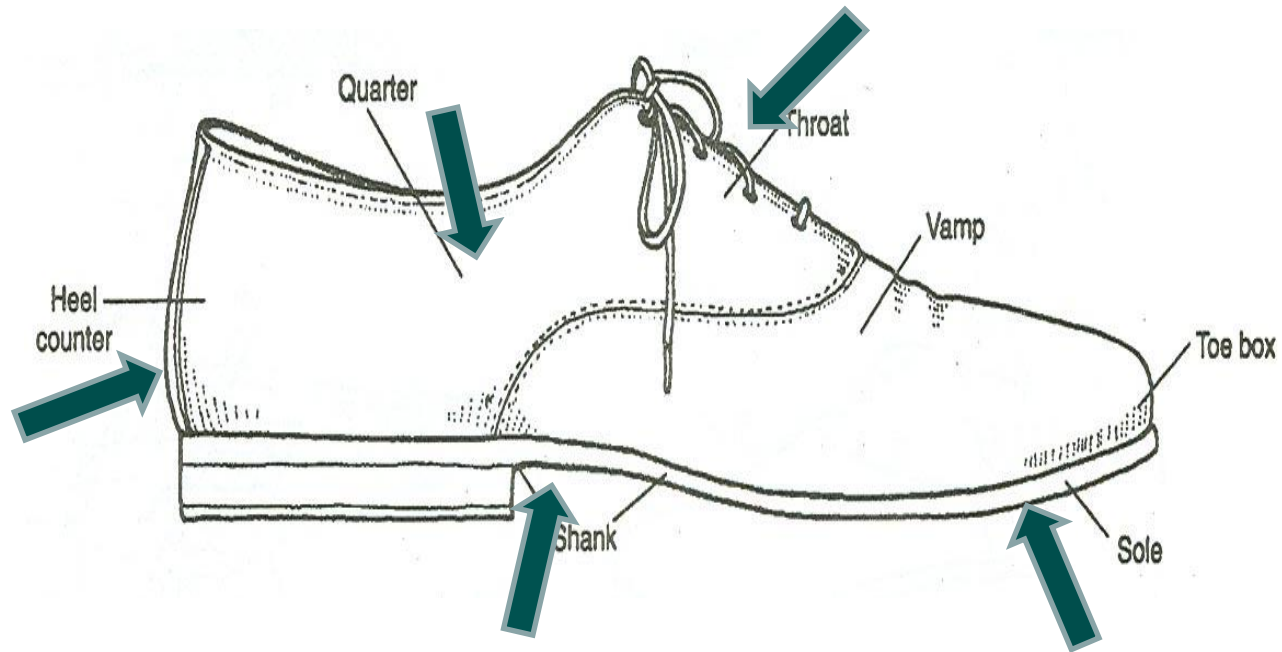
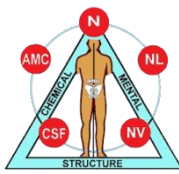
족부 교정의 필요성



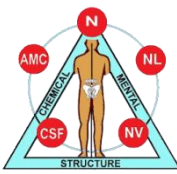
Body Language of Foot Dysfunction



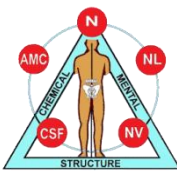
신발의 선택



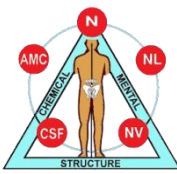
신발 선택의 예



교정에 부적합한 신발



신발 선택시 주의점



1.

폭이 좁지 않아야 !!

2.

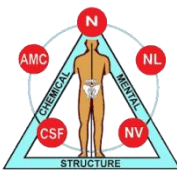
발의 크기에 맞게

3.

용도에 맞게 (등산,골프)

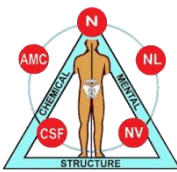


족부 클리닉 안내문



<아식스운동화>	<랜드로바>
TJG 443 TJG 440	

<아식스운동화>		<랜드로바>	
여 자	TJG 443 TJG 440 Q955N Q051N BL1001 SD-0911 SD-0912	남 자	MS 746W SX 352 MX 548M SX 352 MS 247H FG 710



Self-Forming Orthotics



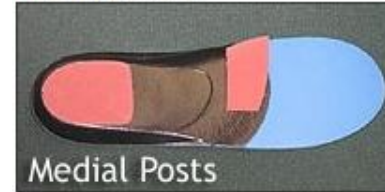
Prefab Diabetic Orthotics



Custom Orthotics

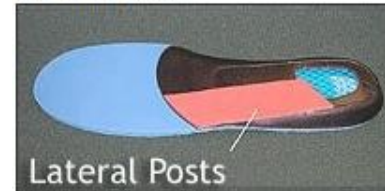


Medial Posts:



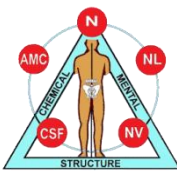
Medial Posts

Lateral Post:



Lateral Posts

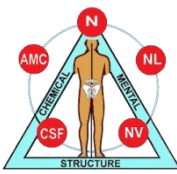
깔창(Biothotic Sole)의 구조



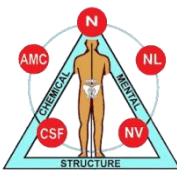
ORTHOFEET® - *The Orthotic Shoe*



깔창(Biothotic Sole)의 구조



깔창의 종류와 크기의 선택



1.

신발 깔창과 크기가 맞게



2.

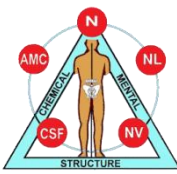
운동화는 sport type



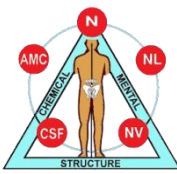
3.

기능성 구두는 pro type

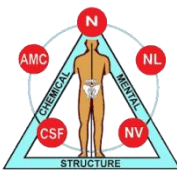
깔창의 종류와 크기의 선택



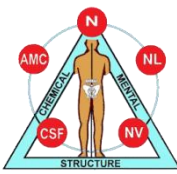
깔창의 제작(동영상1)



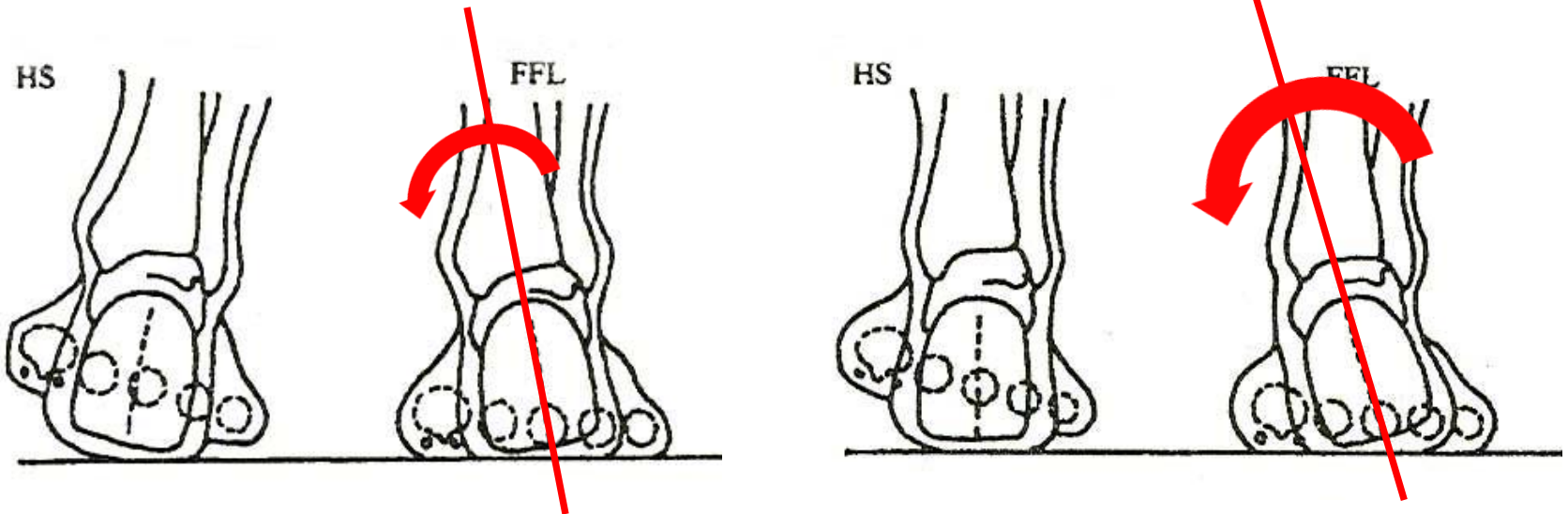
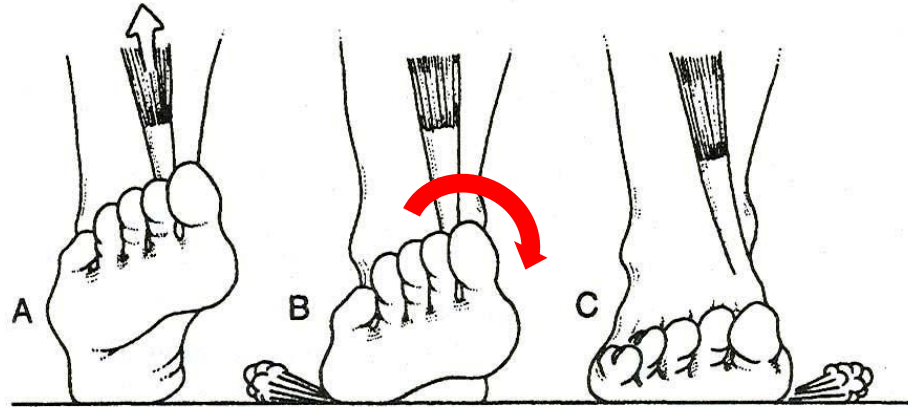
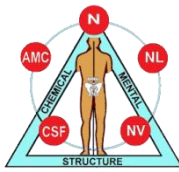
깔창의 제작-Orthofeet(1)



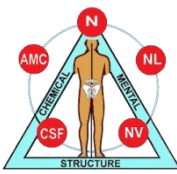
깔창의 제작-Orthofeet(2)



Foot Pronation(회내, 옆침) 의 의미

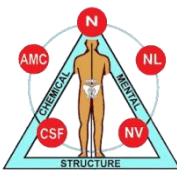


Foot Pronation(회내, 옆침) 의 의미

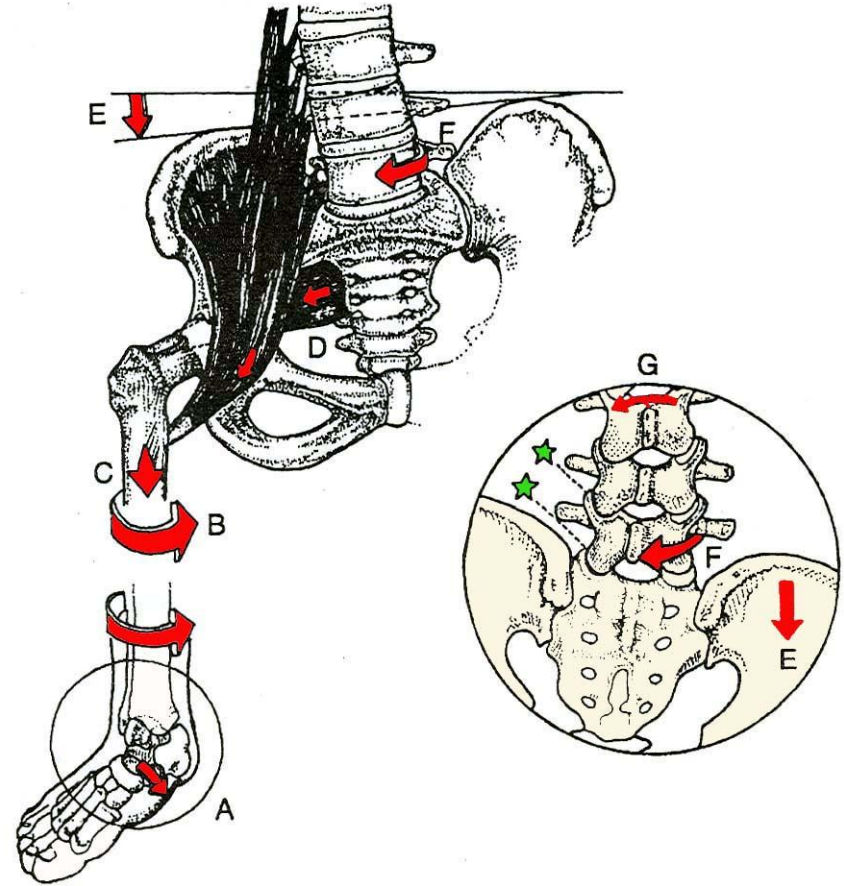


- 보행 주기를 위한 필수적인 요소
전경골근과 후경골근의 활성화 → 내측장궁을 지지
- 내측 장궁은 pronation 기간동안 충격 흡수
→ 지표면으로부터 받는 힘을 발과 몸으로 분산
- Foot pronation은 정상적으로 필요한 과정이나
과도한 pronation이 문제가 된다
- 과도한 pronation은 단계적으로 구조적인 stress를 유발
→ 몸의 여러곳에 remote problem을 야기

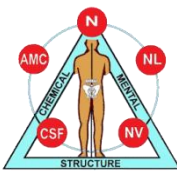
과도한 Pronation의 영향



- A : 과도한 옆침
- B : 하지 내회전
- C : 아래로
- D : 장요근, 이상근에 장력
- E : 골반 하강
- F : L5 단축측 회전
- G : 요추 보상 작용
- ★ : closed facet

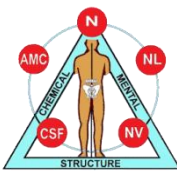


과도한 Pronation(회내, 옆침) 의 교정

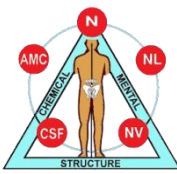


- 깔창을 사용하여 과도한 pronation을 교정할 때 지나친 교정이 일어나지 않도록 주의해야 한다
 - 4도의 회내전은 충격흡수와 하퇴부의 내회전 조절에 필요
- Hard orthotics는 지나친 교정을 유발 할 수 있다
- 지나친 교정은 충격흡수장치로서의 역할과 지표면에 적응하는 발의 기능을 감소시킬 수 있다
- Semi-solid Biothotic Sole을 사용하여 보행을 시키면서 자연스러운 교정을 유도하는 것이 바람직 하다

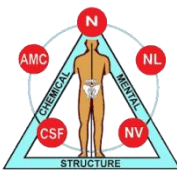
깔창의 제작(동영상2)



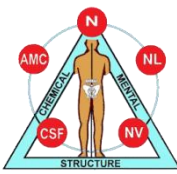
족부 재활 치료



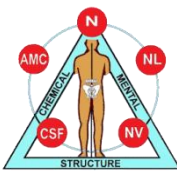
족부 재활 치료(동영상)



깔창 제작 후 관리(동영상)



족부 치료시 병행치료



효과적인 족부 치료

병행치료

부신

장기능

해독

아탈구

근육