TEODOR HUZIJ DO, FACN - OMED 2022

OSTEOPATHIC PSYCHIATRY: OMM AND COGNITIVE DISORDERS

DISCLOSURES

- Teodor Huzij DO
  - No disclosures

LEARNING OBJECTIVES

- Review literature for manual medicine and cognitive disorders
- Review literature for neuroanatomic and neurophysiologic associations with cognitive disorders
- Discuss proposed osteopathic manipulative medicine interventions for specific cognitive disorders

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COGNITIVE DISORDERS

LITERATURE REVIEW: MANUAL MEDICINE

SEARCH TERMS USED

- manipulation, manual medicine, chiropractic, osteopathic, osteopathy, spinal manipulation, cranial, massage, craniosacral, therapeutic touch, attention-deficit, attention-deficit/hyperactivity, ADHD, dementia, Alzheimer's, neurocognitive

RELEVANT CITATIONS: CONDITION

- ADHD: 22
- Alzheimer's Disease: 10

RELEVANT CITATIONS FOR ADHD: MODALITY

- Chiropractic: 8
- Craniosacral: 3
- Massage: 6
- OMT: 5

CHIROPRACTIC AND ADHD: LITERATURE SUMMARY

- 8 Relevant Studies
  - 5 Case studies
  - 1 Case series of 4 patients
  - 1 Prospective randomized cross over trial of 30 subjects only 9 completed
    - Goal of study was feasibility, No significant changes with intervention
  - 1 Systematic review
    - Chiropractic improvement of ADHD supported by low levels of evidence

Bastecki, J Manipulative Physiol Ther, 2004. Muir, J Chiropr Med, 2012. Wittman, J Cl Chiropr Pels, 2009. Jaszewski, J Ped Maternal & Fam Hlth, 2010. Alcantara, Explore, 2010. Cade, Brain Sci, 2021.

CRANIOSACRAL AND ADHD: LITERATURE SUMMARY

- 3 Relevant Studies
  - 1 Survey of craniosacral therapists and conditions treated
  - 1 Case study
    - Patient did not have diagnosis of ADHD
  - 1 Unrandomized prospective study, 12 children in Tx grp, 12 in control grp
    - Connors scales, 2 Tx/wk for 15 sessions, Significant reduction in inattention and hyperactivity

Haller, Compl Therapy Medicine, 2021. Gillespie, Explore, 2008. Amrovabady, Iran Rehab J, 2013.

MASSAGE AND ADHD: LITERATURE SUMMARY

- 6 Relevant articles
  - 1 Pilot project, Massage grp vs Control grp (6 total subjects)
    - Connors Parent improvement, Teacher report no change
  - 1 Review includes 1 of the Prospective randomized trials
    - 28 adolescents, Tx grp vs Relaxation grp, 10 sessions during school
    - Self report- Happier. Teacher Connors- ↓hyperactivity, more on task

Maddigan, Can Child Adolesc Psychiatr Rev, 2003. Arnold, Ann N Y Acad Sci, 2001. Field, Adolscence, 2003.

MASSAGE AND ADHD LITERATURE SUMMARY

- 1 Randomized prospective trial 56 subjects, Mothers massaged child's feet
  - ADHD questionnaire improved scores
- 1 Intervention only study
  - 10 'cured', 9 'remarkably effective', 5 'no effect'
- 1 Systematic review and meta-analysis, 8 RCT 3 Cases, 7 in China
  - Variation in criteria, poor quality, make it 'difficult to draw conclusions'

Asadi, Iran J Nurs & Midwif Res, 2020. Chen, Compl Therapy Medicine, 2019. Wang, Ch J Tissue Eng Res, 2005.

OMT AND ADHD: LITERATURE SUMMARY

- 5 Relevant articles
  - 1 Uncontrolled trial of 4 subjects using EEG biofeedback and cranial
    - Slow wave activity reduced significantly in subjects
  - 1 Poster case report of 7 y.o. male, Tx with 3 sessions of cranial
    - Parent scores decreased but teacher score increased
  - 1 German study, 50 Tx with OMT, 27 control group
    - Connors Parent scale had 50% improvement in OMT group

Blood, Am Acad Ost J, 2000. Rütz, Akademie für Osteopathie, 1999. Bierent-Vass, Akademie für Osteopathie, 2004.

OMT AND ADHD: LITERATURE SUMMARY

- 1 German Study, 30 child subjects in 3 groups
  - Grp 1: SBS & Membrane Tx. Grp 2: Membrane Tx. Grp 3: Sham Tx
  - Connors scale significantly improved in Grp 1
- 1 Italian Study, 28 child and adolescent subjects, OMT grp and Control grp
  - Biancardi-Stroppa Test used, OMT associated with improved scores

Rashik, UNTHSC Internal Research Site, 2022. Accorsi, JAOA, 2014.

RELEVANT CITATIONS FOR ALZHEIMER'S DISEASE: MODALITY

- Therapeutic touch: 2
- Craniosacral: 1
- Massage: 6
- OMT: 1

THERAPEUTIC TOUCH AND AD: LITERATURE SUMMARY

- 1 Uncontrolled study of 10 patients with Alzheimer's who received therapeutic touch.
  - Measures: agitation and cortisol levels (salivary & urinary)
  - Significant decrease in agitation (vocalization, pacing). Cortisol levels decreased by not significantly
- 1 Prospective randomized blinded study of 51 patients with Alzheimer's
  - Measure: Physical aggression, Physical non-aggression, Verbal agitation
  - Reduced physical non-aggression reduced significantly

Woods, Biol Rs Nurs, 2002. Hawranik, W J Nurs Res, 2007.

CRANIOSACRAL AND AD: LITERATURE SUMMARY

- Pilot study convenience sample of 9 patients with dementia
  - Measure: The Cohen-Mansfield Agitation Inventory (CMAI)
  - Craniosacral therapy daily for 6 wks
  - Significant reduction of aggression, physical non-aggression, and verbal agitation for periods of the 6 wks
  - Significant reduction of physical non-aggression, and verbal agitation for 3wks post intervention

Gerdner, Alzheimer's & Dementia, 2007.

MASSAGE AND AD: LITERATURE SUMMARY

- 1 Uncontrolled study of 54 patients with cognitive impairment
  - Measure: Disruptive behaviors (poorly defined)
  - 4 of 5 disruptive behaviors decreased during treatment and at follow up
  - No change in socially disruptive behaviors (poorly defined)
- 2 RCT of 53 and 55 patients with dementia receiving foot massage (10min)
  - Measure: BP, HR, Cohen-Mansfield Agitation Inventory (CMAI)
  - HR lower but not significant, ↑CMAI (↑ agitation)

Holiday-Welsh, Geriatric Nurs, 2009. Moyle, J Alt & Compl Med, 2014. Moyle, Int J Nurs Studies, 2014.

MASSAGE AND AD: LITERATURE SUMMARY

- 3 Systematic Reviews
  - Aggressive behavior, physical non-aggressive behavior, verbal aggressive behavior and verbal non- aggressive behavior decreased significantly after receiving massage or touch
  - Hand massage for the immediate or short-term reduction of agitated behavior, and the addition of touch to verbal encouragement to eat for the normalization of nutritional intake
  - Small sample sizes and lower quality studies, difficult to draw conclusions

Wu, J Adv Nurs, 2017. Hansen, Cochrane Data Syst Rev, 2006. Smith, Occup Ther Healthcare, 2020.

OMT AND AD: LITERATURE SUMMARY

- 1 Uncontrolled study in 6 rats with Alzheimer's model treated with CV4 daily for 7 days
  - Measure: spatial memory and changes in substrates associated with mechanisms of metabolic waste clearance in the central nervous system
  - Significant improvement in spatial memory and positron emission tomographic imaging and immunoassays revealed reduced amyloid β levels, activated astrocytes, and improved neurotransmission in the aged rat brains

Tobey, JAOA, 2019.

Photo by Sara Kurfeß on Unsplash

COGNITIVE DISORDERS

LITERATURE REVIEW: NEURO A&P

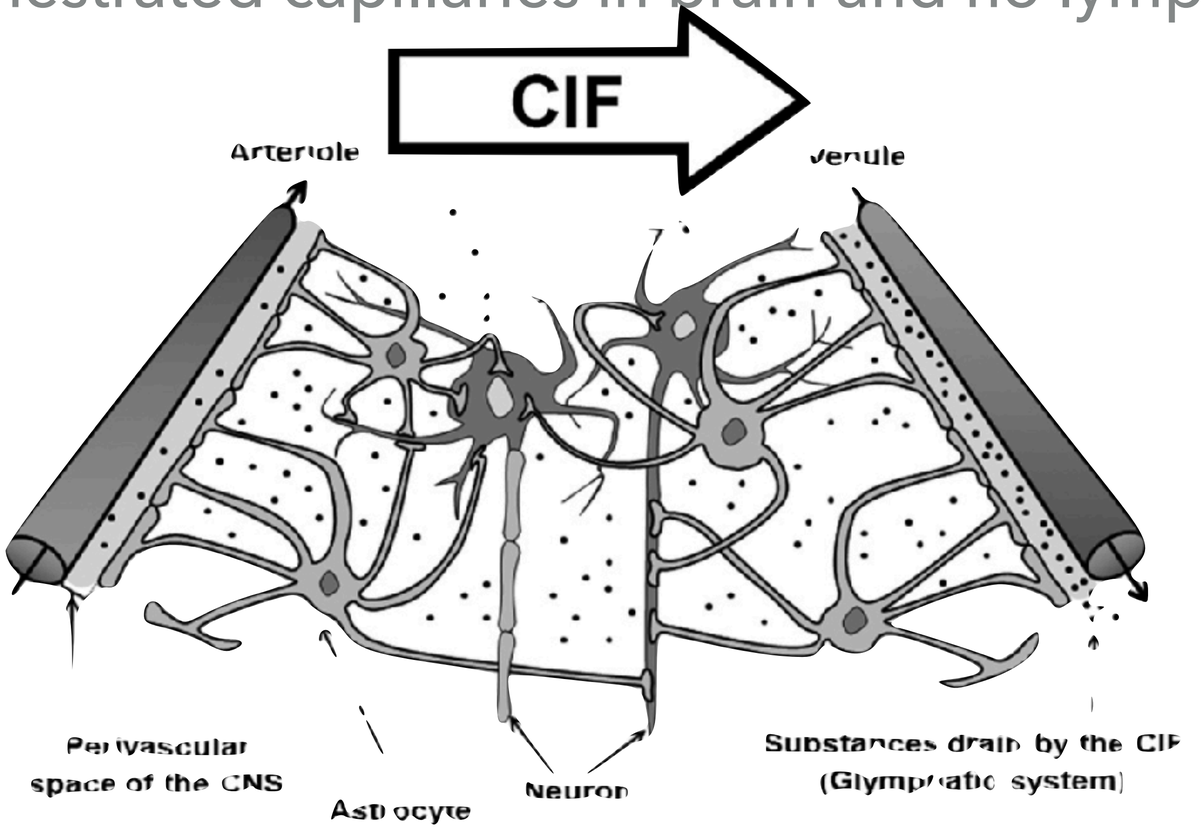
GLIAL CELLS

- Glial cells support the nervous system
  - Astrocytes, microglia, and oligodendrocytes
    - Smaller and more numerous than neurons
  - Astrocytes
    - GFAP- main component of astrocyte intermediate filaments

Marino, Cureus, 2022.

INTERSTITIAL FLUID MANAGEMENT IN BRAIN PARENCHYMA

- No lymphatic vessels within the brain parenchyma
  - No fenestrated capillaries in brain and no lymphatics (tight junctions, BBB)

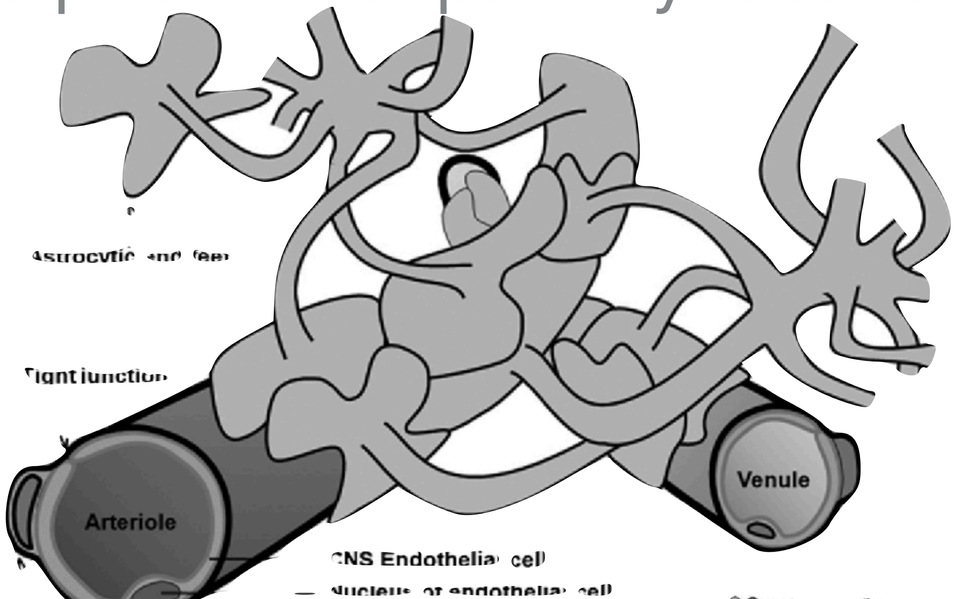


Chikly, J Bodywork & Movt Ther, 2013

Marino, Cureus, 2022.

GLYMPHATIC SYSTEM FUNCTIONS

- Glial cells form a perivascular space and move fluid to veins, dura or ventricles (glial vascular pathway=glymphatic system)
  - Astroglial AQP-4 water channels remove interstitial water
  - Para-arterial and para-venous pathways clear interstitial solute



Chikly, J
Bodywork & Movt Ther, 2013

Marino, Cureus, 2022.

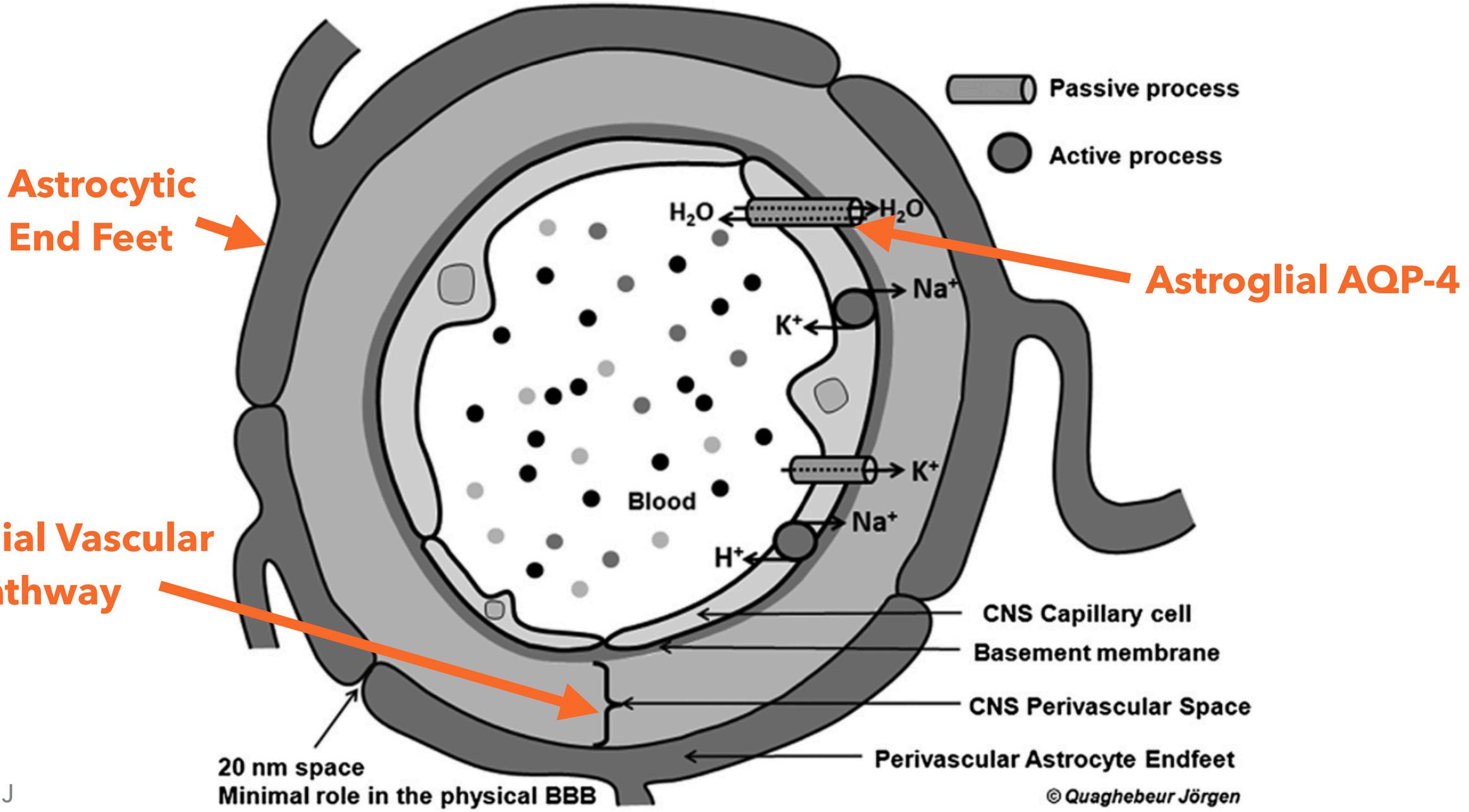


Figure 4 Cross section of a CNS capillary and its perivascular astrocytic endfeet.

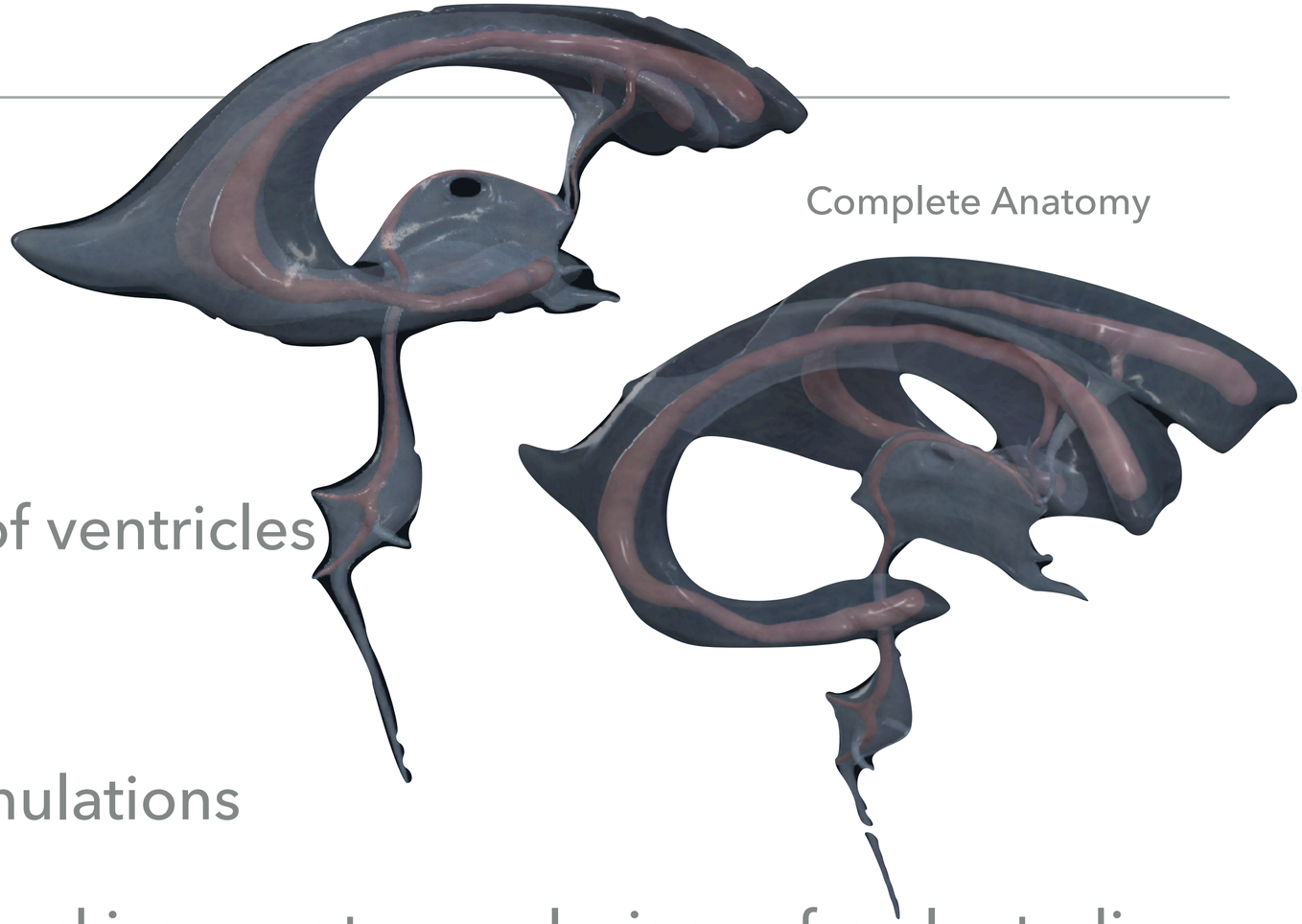
Chikly, J
Bodywork & Movt
Ther, 2013

BRAIN INJURY AND THE GLYMPHATIC SYSTEM

- Brain injury
  - → ↑ GFAP → ↑ astrocytes number & morphology changes
    - → ↓ interstitial clearance (including βamyloid)
      - → ↑ βamyloid and the rest

Marino, Cureus, 2022.

CSF PRODUCTION AND FLOW



Complete Anatomy

- Classic Model
  - CSF produced in choroid plexus of ventricles
  - Circulates
  - Absorbed through arachnoid granulations
- Based on misinterpretation of data and inaccurate conclusions of early studies

Chikly, J Bodywork & Movt Ther, 2013. Marino, Cureus, 2022.

CSF PRODUCTION AND FLOW

- Updated Model
  - CSF production, circulation and reabsorption primarily managed by interface of glymphatic system and the interstitial space
  - CSF influx via para-arterial glymphatics & efflux via para-venous lymphatics
  - Also produced by choroid plexus and absorbed by arachnoid granulations
  - CSF circulates subdural space which becomes the perineureum of all nerves leaving the CNS

Chikly, J Bodywork & Movt Ther, 2013. Marino, Cureus, 2022.

CSF PRODUCTION AND FLOW

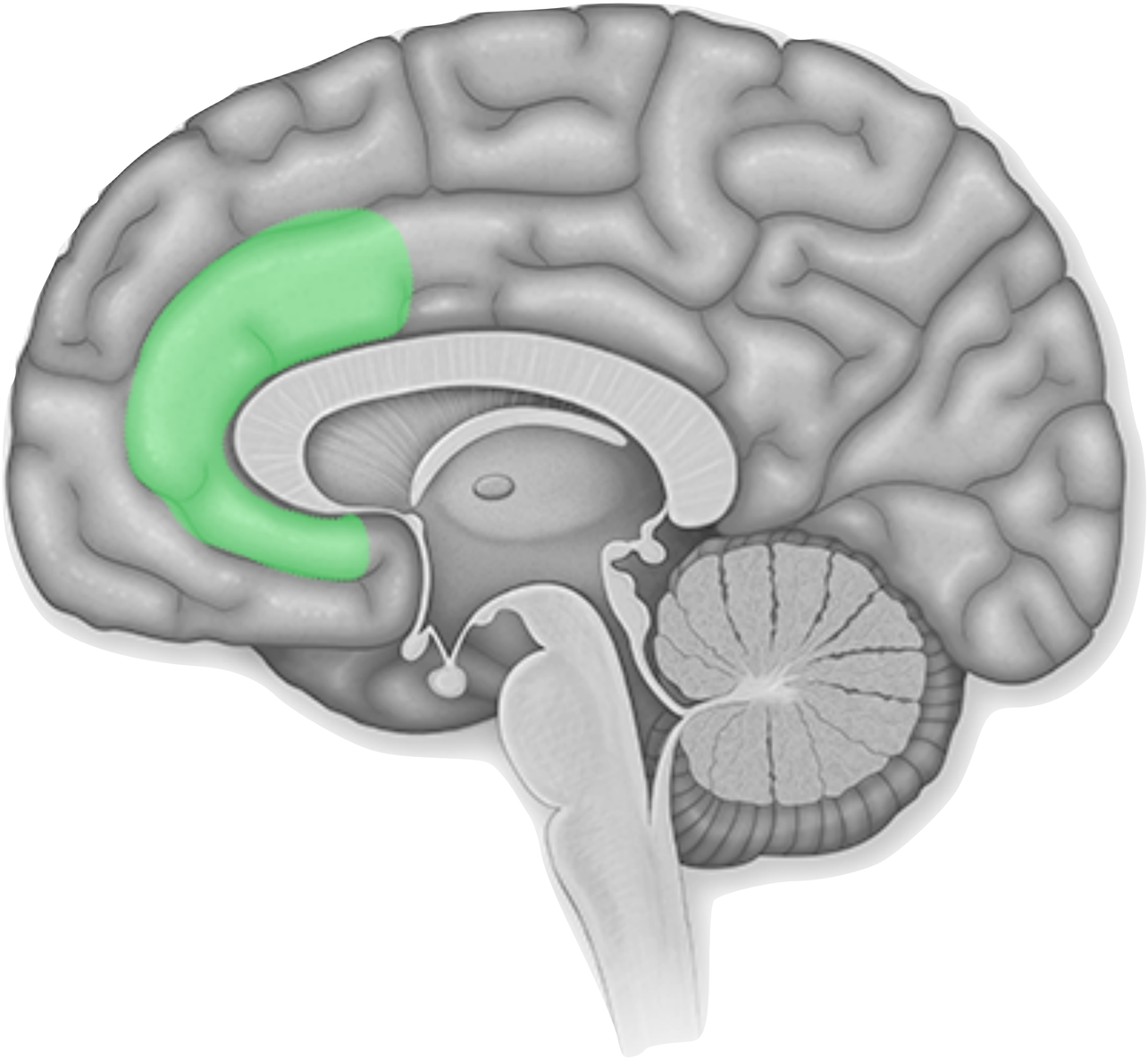
- CSF Flow Medial Temporal Lobe and Inferior Frontal Lobe
  - Medial temporal lobes→Lateral olfactory stria→Olfactory trigone→Olfactory tract→Olfactory bulb→Fibers through cribriform plate→Upper nasal cavity
  - ↑Patient age associated with ↓CSF flow through cribriform plate
  - Alzheimer's patients had the smallest CSF flux capacity
- "The lymphatics are closely and universally connected with the spinal cord and all other nerves, long or short, universal or separate, and all drink from the waters of the brain." A.T. Still, Philosophy of Osteopathy

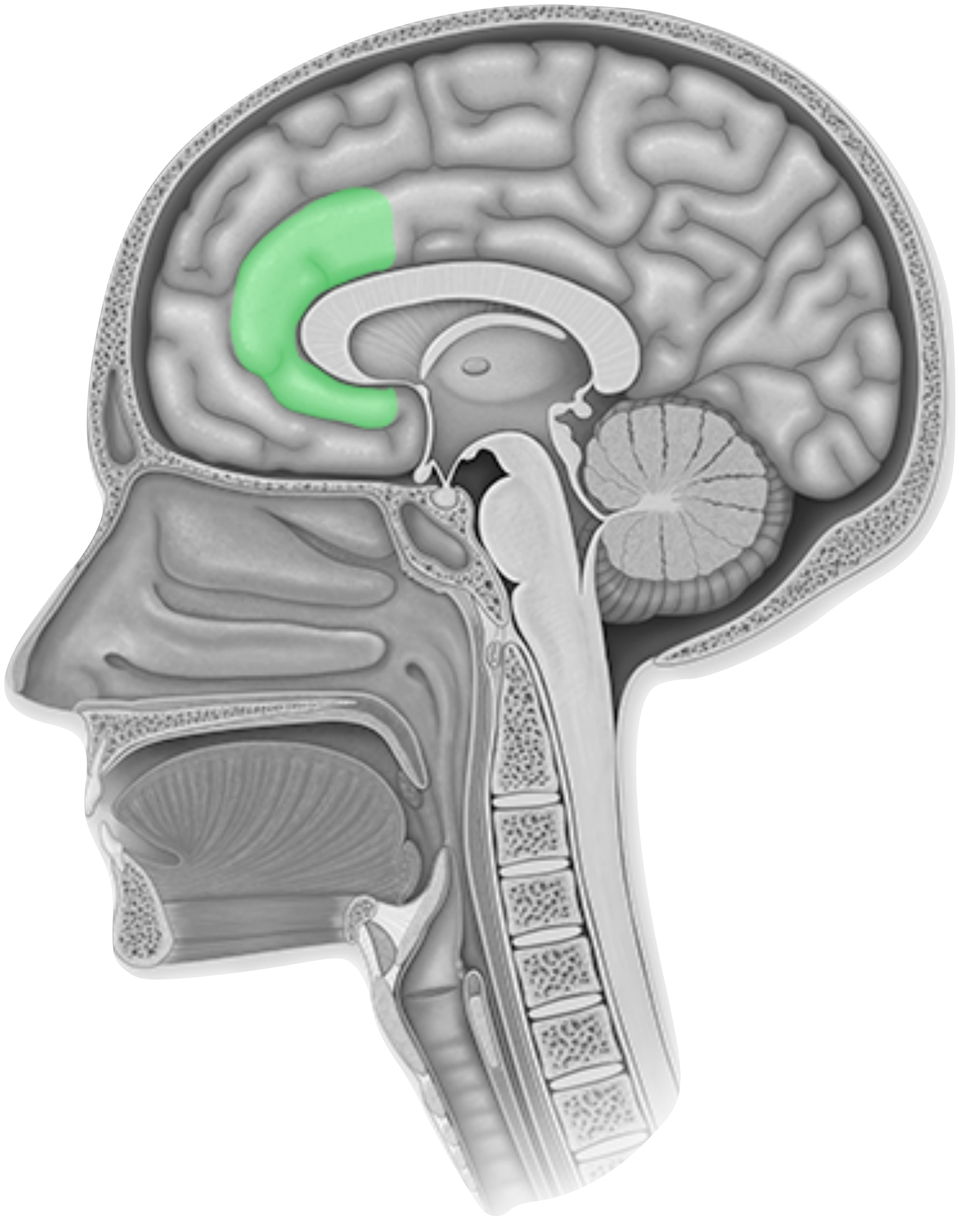
Chikly, J Bodywork & Movt Ther, 2013. Marino, Cureus, 2022. Still, Philosophy of Osteopathy, 1899.

ADHD: MOST EVIDENCE

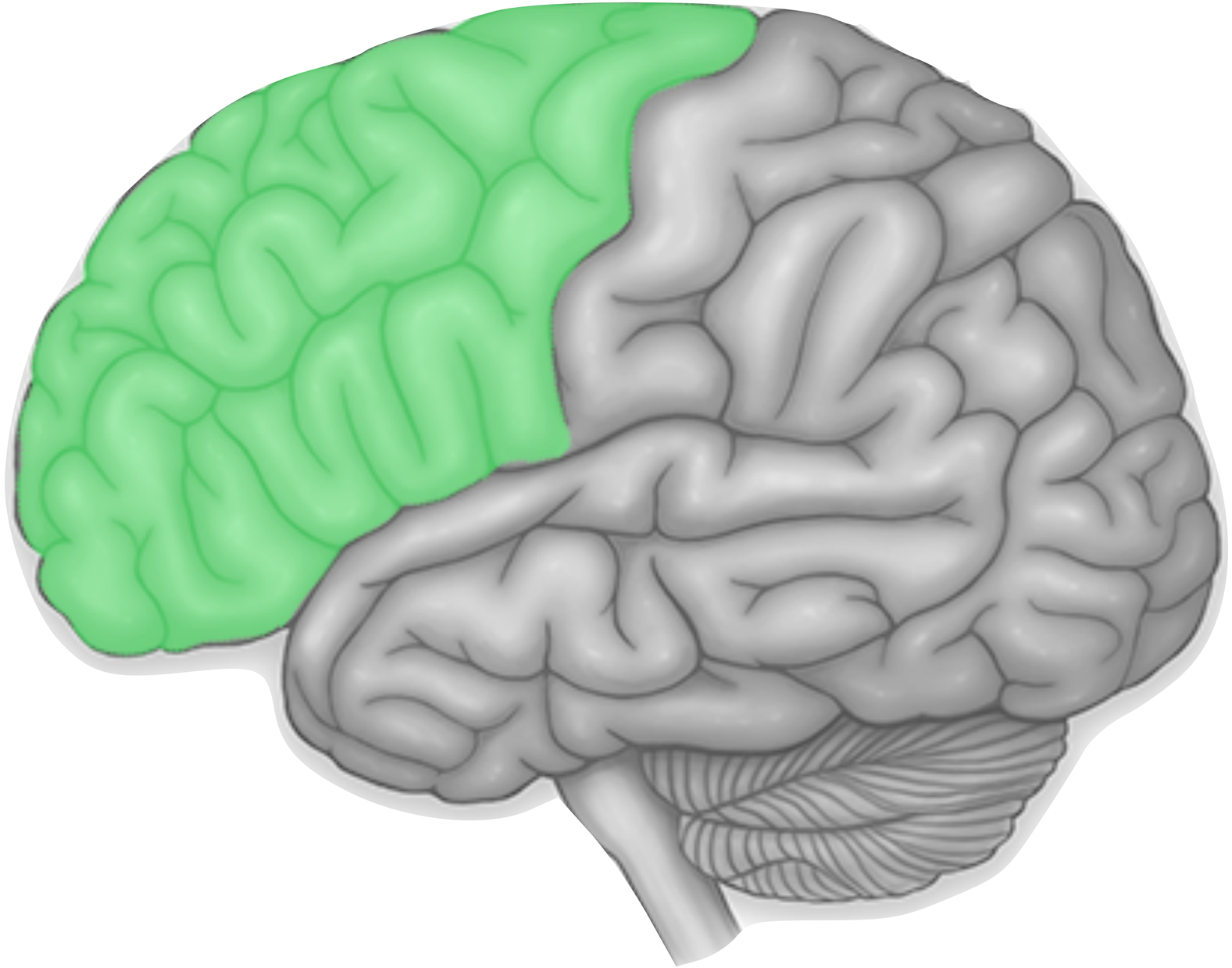
- Anterior cingulate gyrus decreased volume and activity
- Frontal lobe decreased volume and activity
- Corpus Striatum decreased volume and perfusion
- Corpus callosum decreased volume
- Dorsolateral prefrontal cortex decreased volume
- Cerebellar vermis decreased volume

ADHD: ANTERIOR CINGULATE GYRUS – ↓VOLUME & ↓ACTIVITY

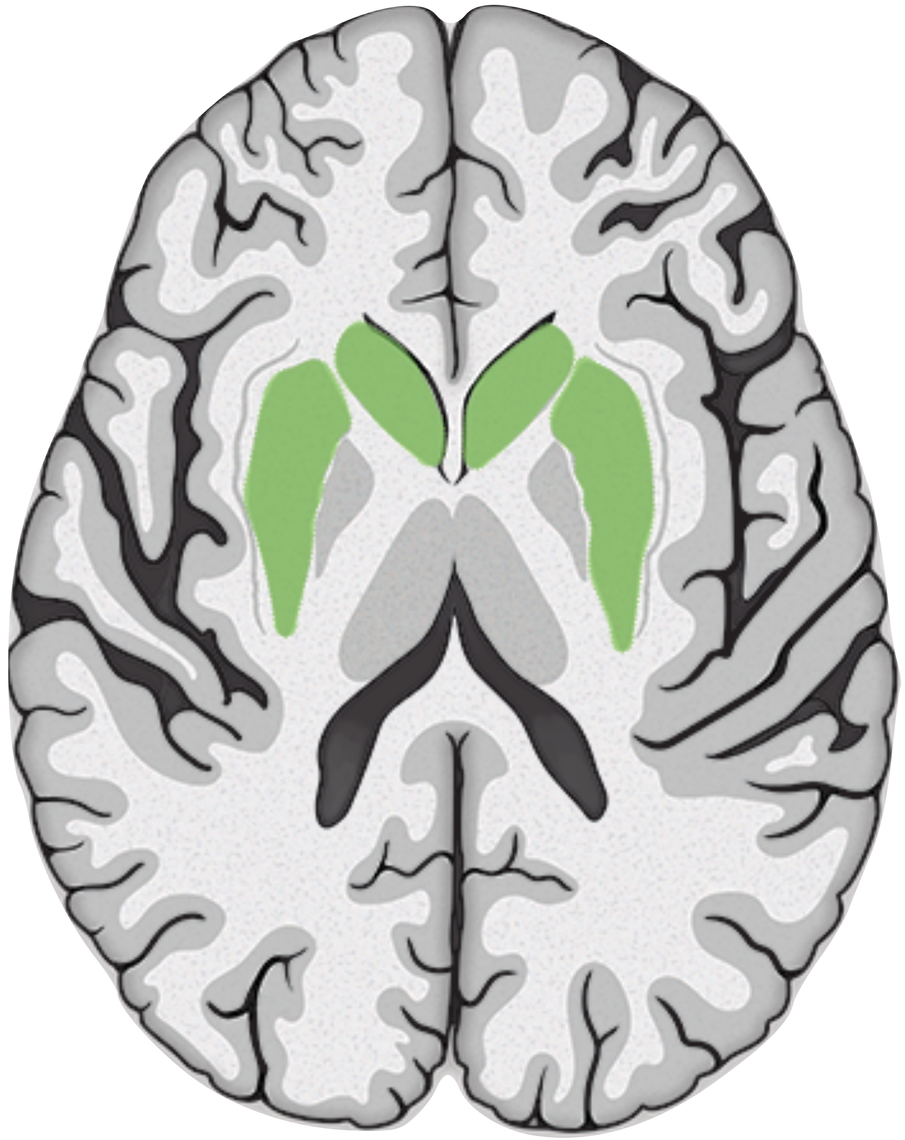




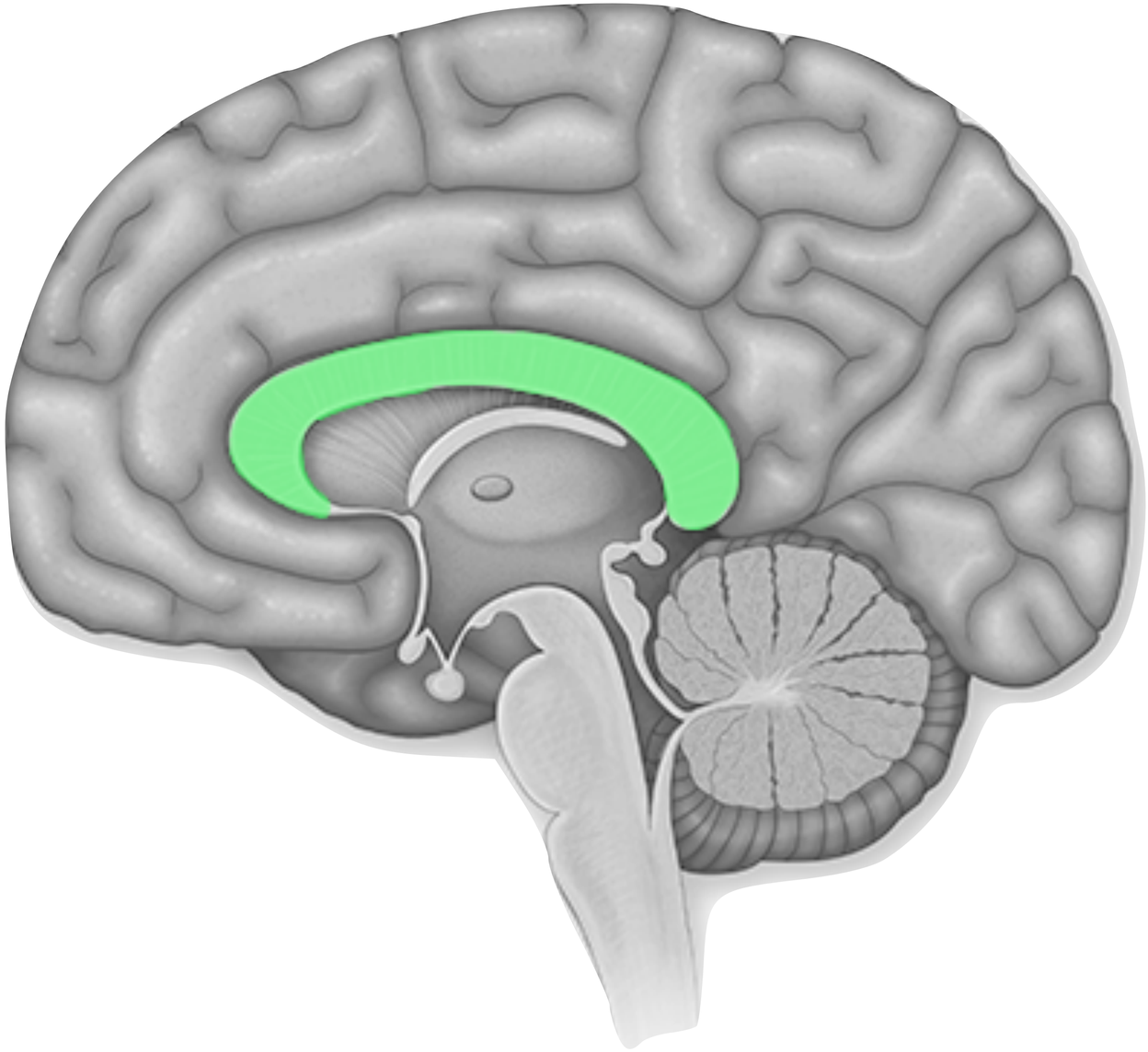
ADHD: FRONTAL LOBE – ↓VOLUME & ↓ACTIVITY

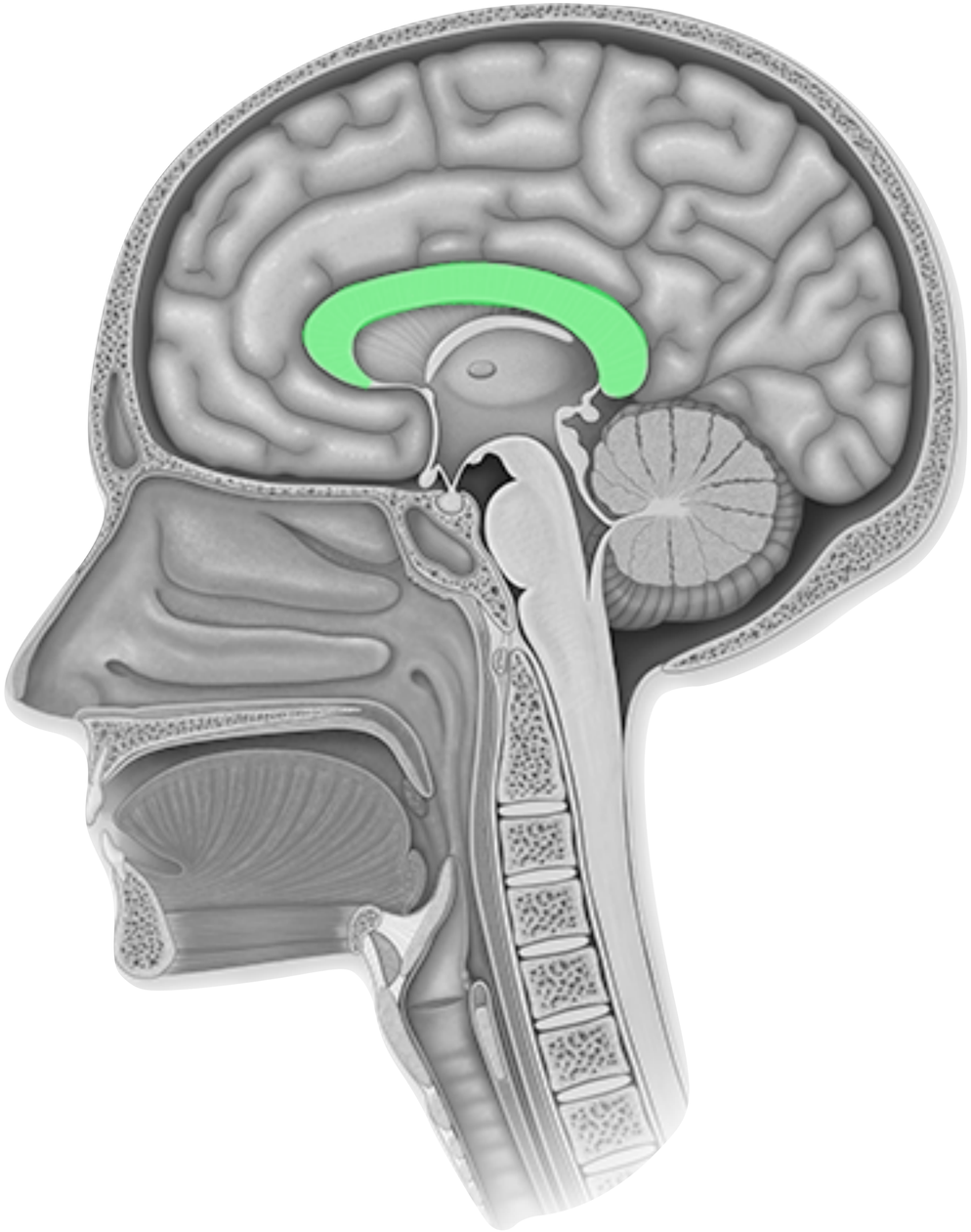


ADHD: CORPUS STRIATUM – ↓VOLUME & ↓PERFUSION

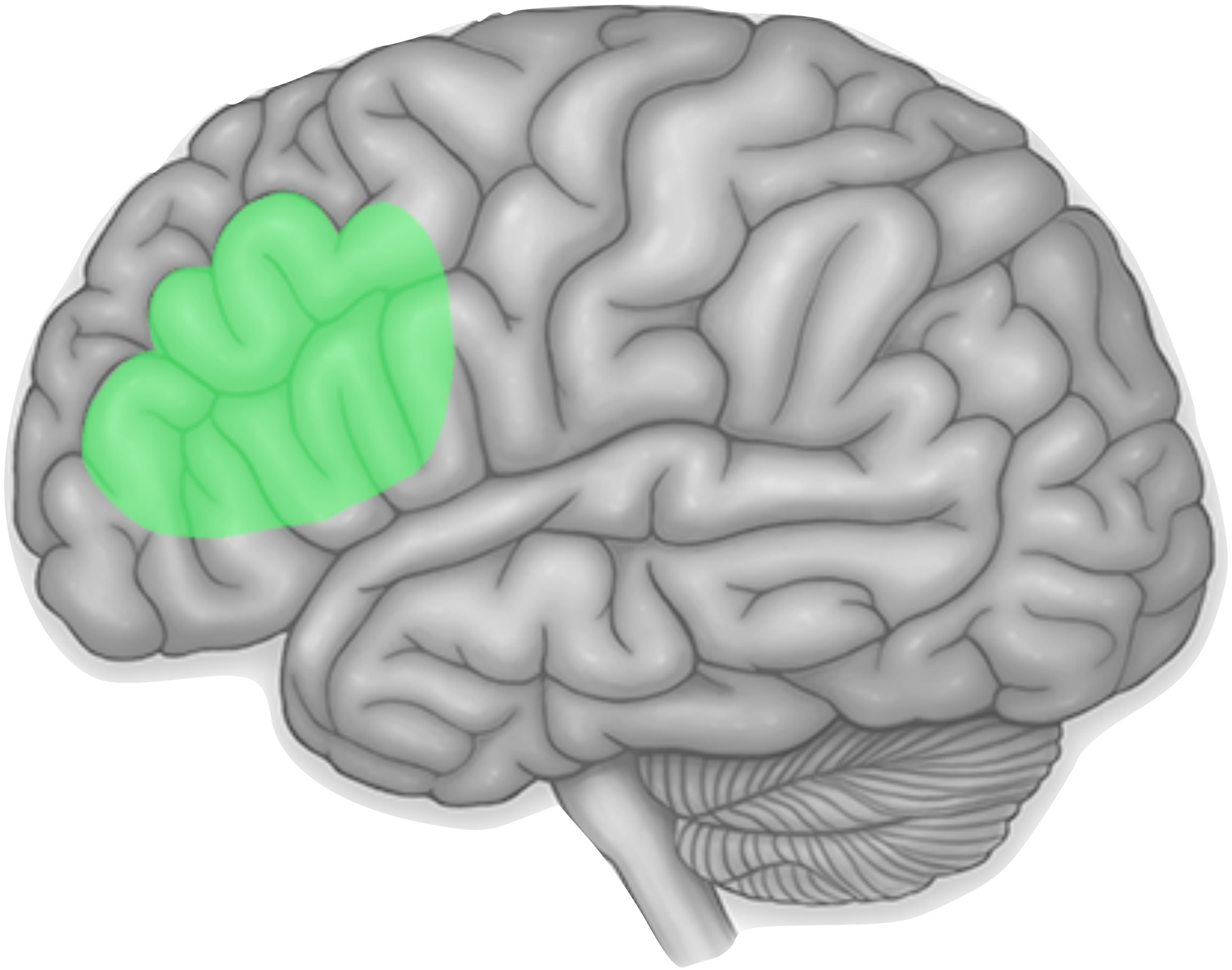


ADHD: CORPUS CALLOSUM – ↓VOLUME

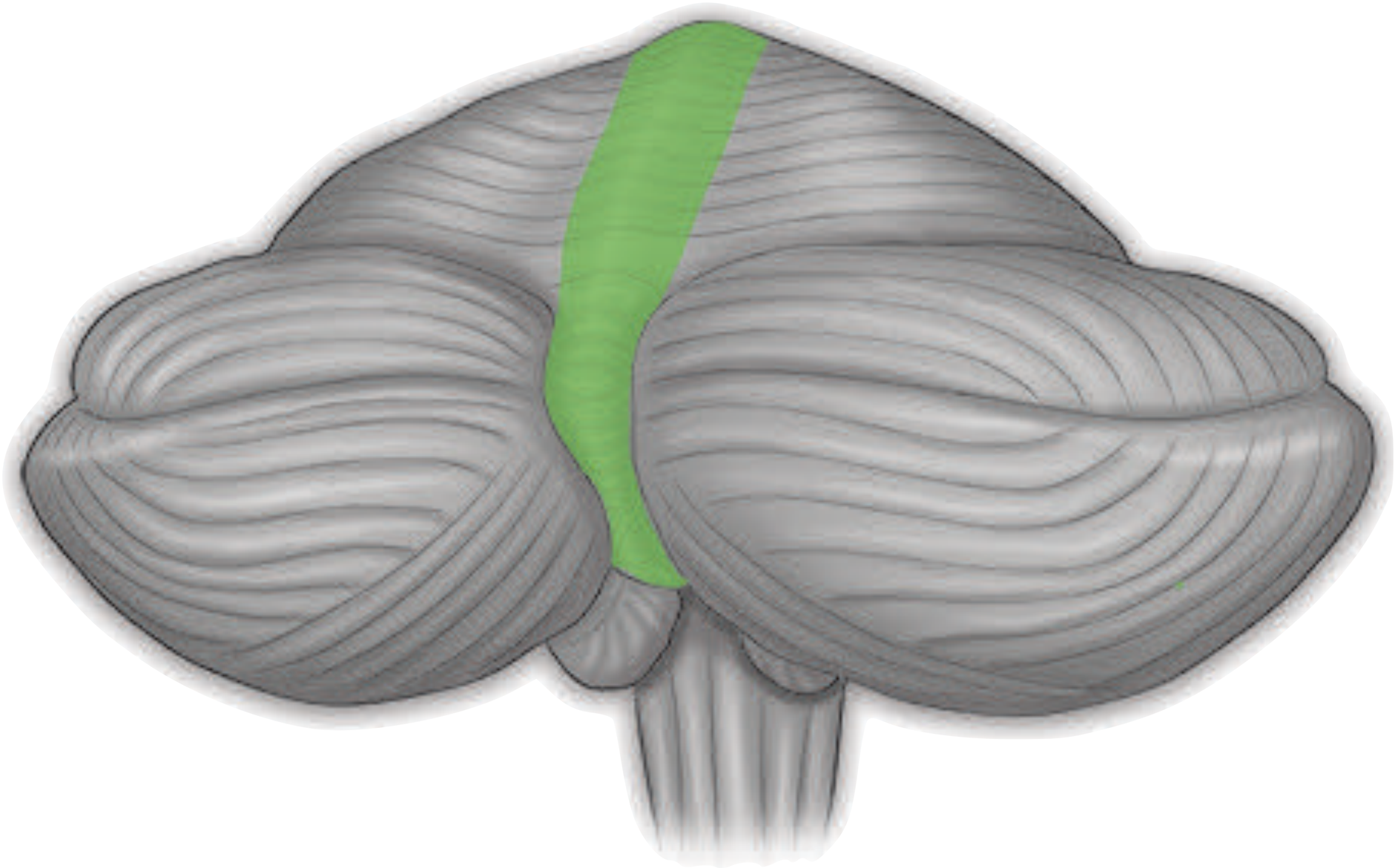




ADHD: DORSOLATERAL PREFRONTAL CORTEX – ↓VOLUME



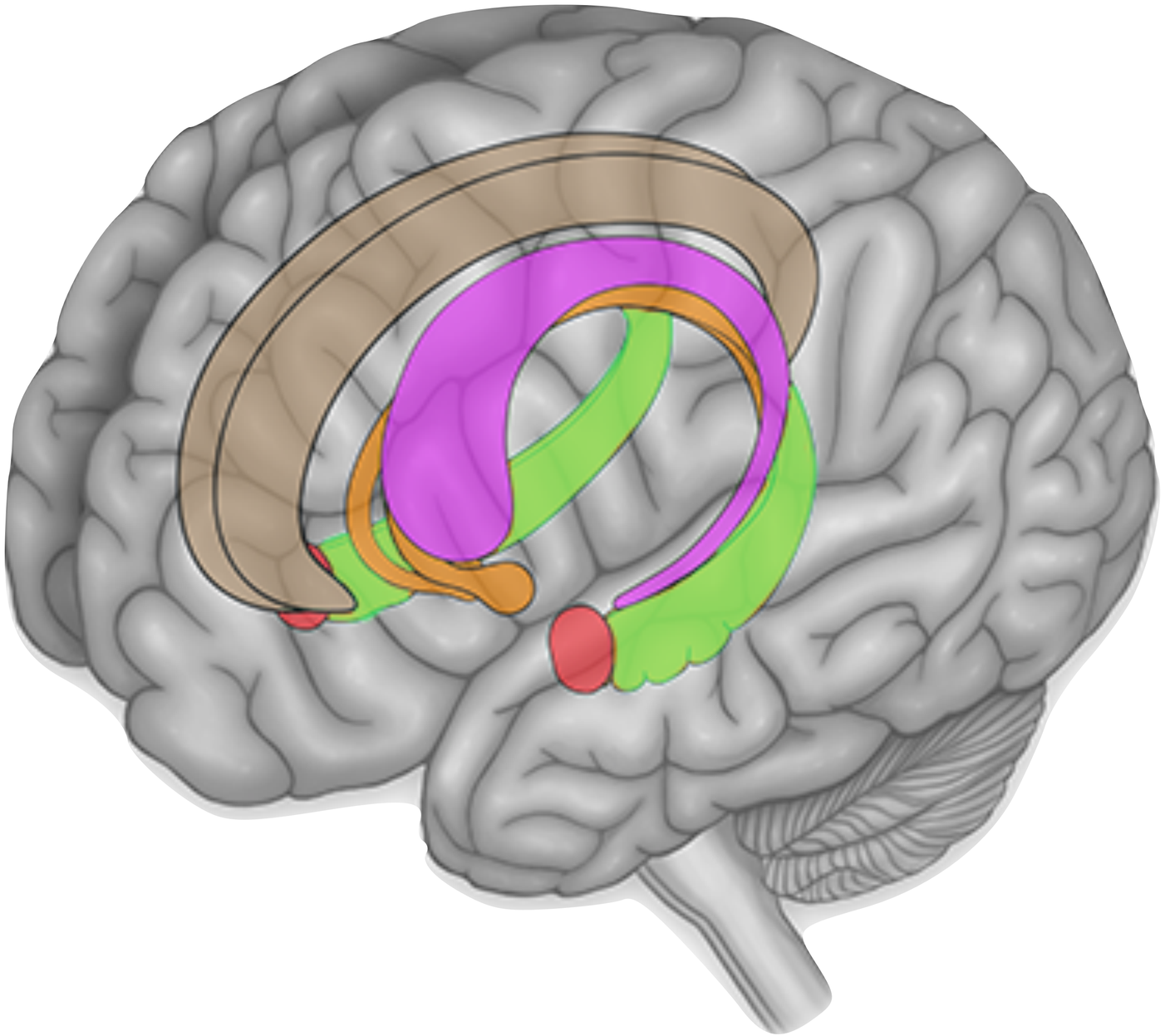
ADHD: CEREBELLAR VERMIS – ↓VOLUME



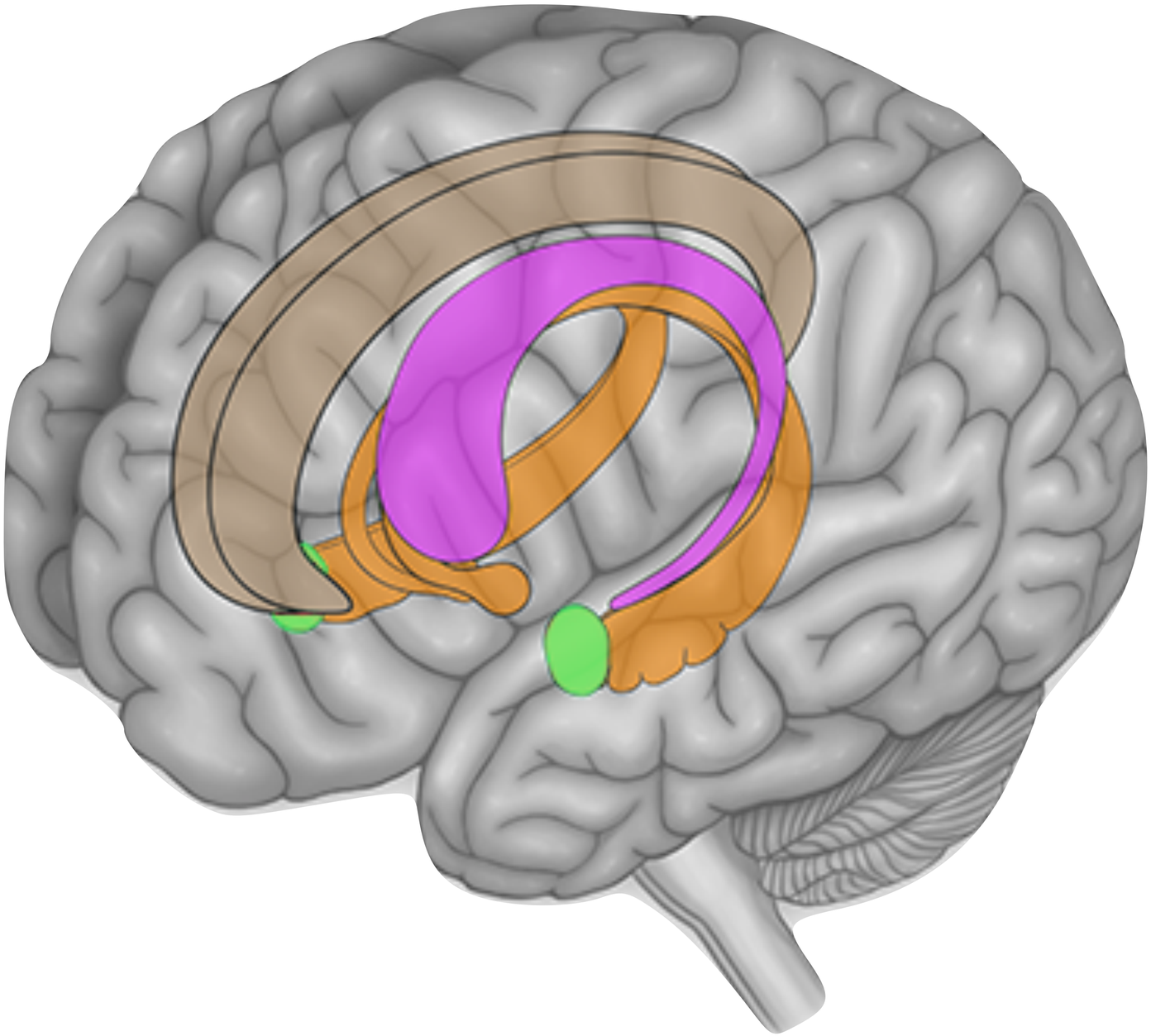
MAJOR NEUROCOGNITIVE DISORDER DUE TO ALZHEIMER'S DISEASE: MOST EVIDENCE

- Hippocampus decreased volume and activity
- Amygdala decreased volume and activity
- Anterior cingulate gyrus decreased volume
- Frontal lobe decreased volume

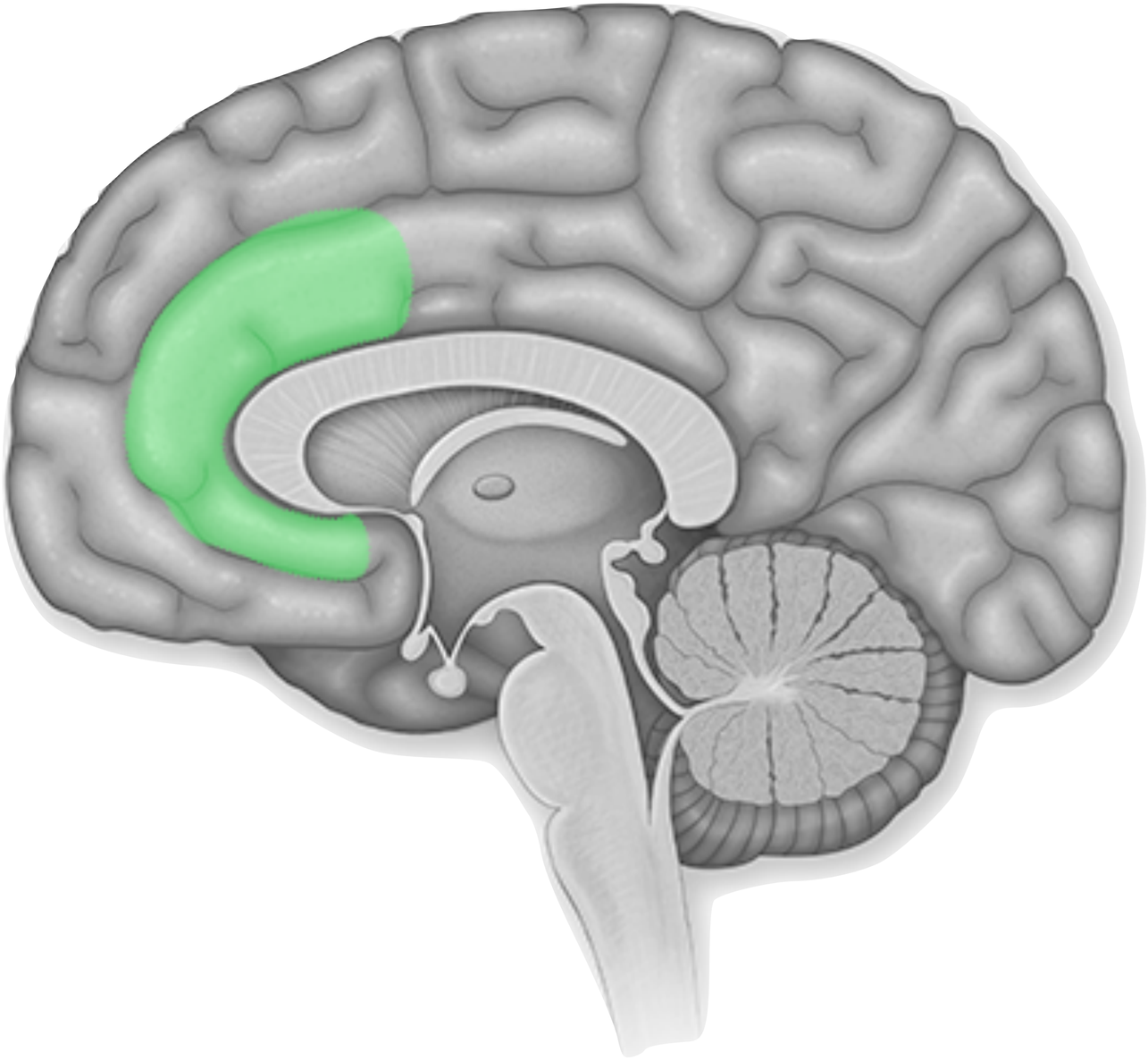
AD: HIPPOCAMPUS – ↓VOLUME & ↓ACTIVITY

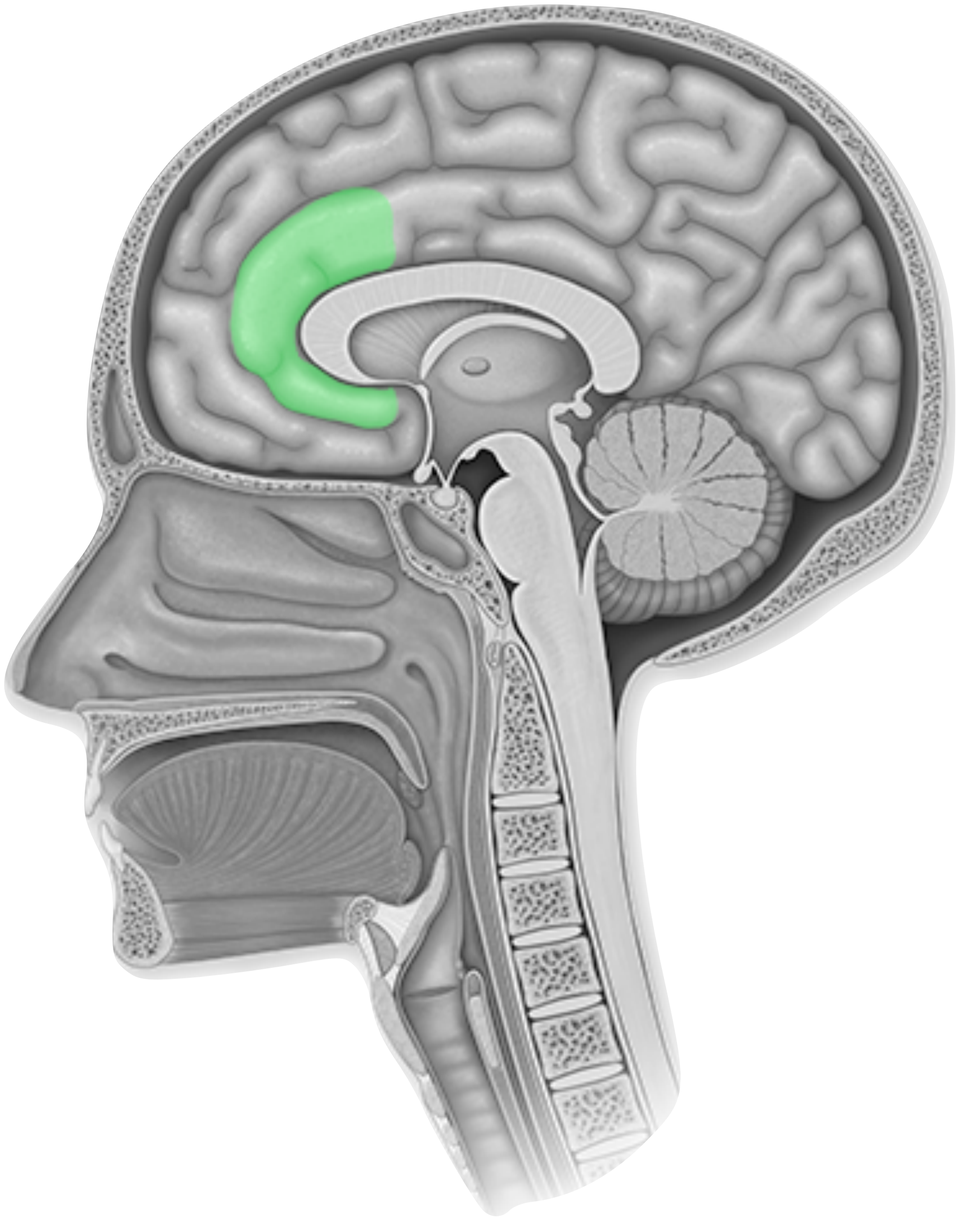


AD: AMYGDALA – ↓VOLUME & ↓ACTIVITY

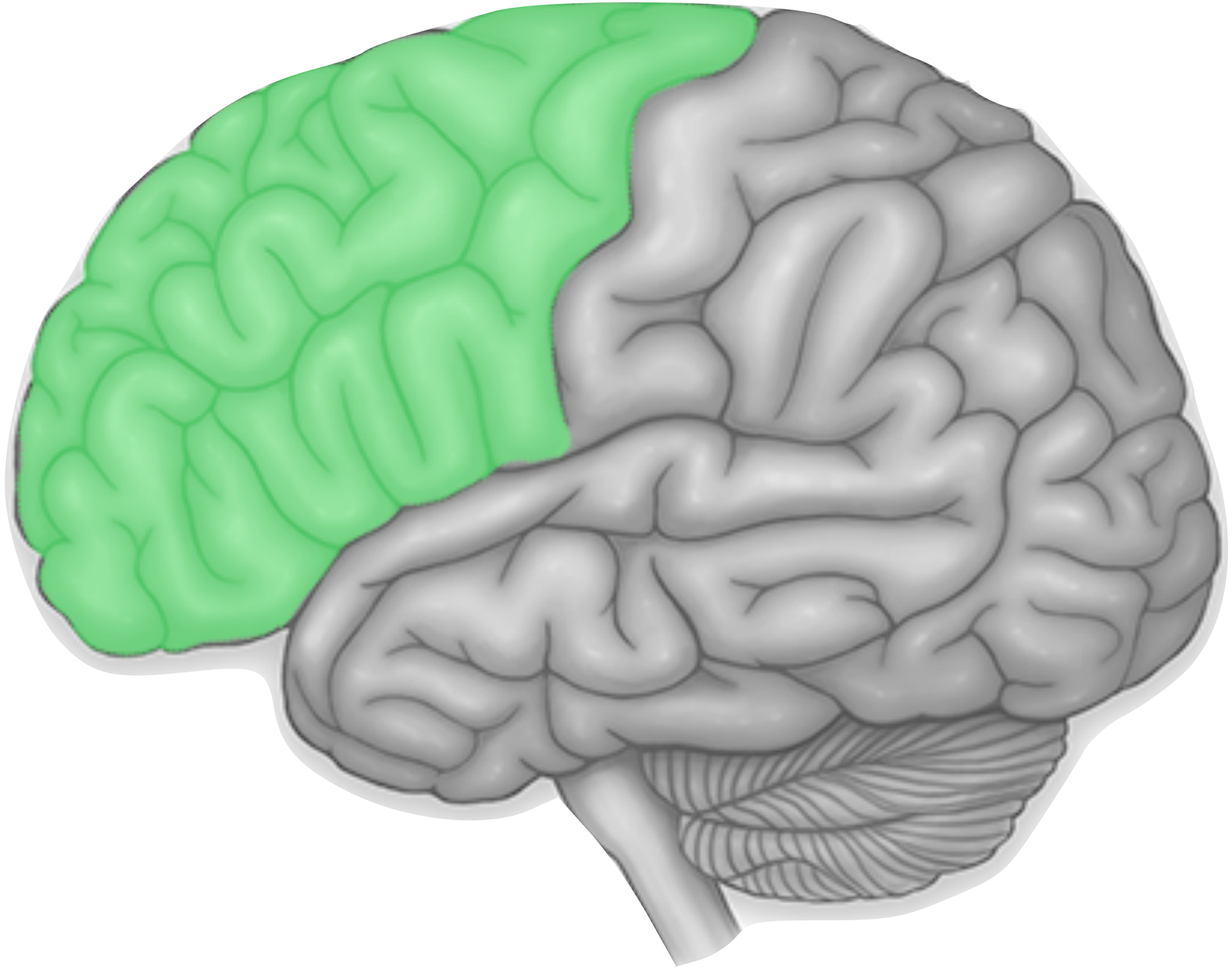


ANTERIOR CINGULATE GYRUS – ↓VOLUME





FRONTAL LOBE – ↓VOLUME



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COGNITIVE DISORDERS

PROPOSED OMM

NOT THE GOAL


AND HOW DOES THAT MAKE YOU FEEL ABOUT YOUR FATHER?
PSYCHIROPRACTOR
ED CULLUM

AN OSTEOPATHIC APPROACH

- An osteopath reasons from his knowledge of anatomy - Still
- Principles of osteopathy follow logic of an applied knowledge of anatomy, physiology and pathology - Webster
- Life is not a composite of the functions of the viscera - Korr

Still-Research & Practice, Webster-Sage Sayings, Korr-Physiological basis

PATIENT SELECTION

- Presence of ADHD or a Major Neurocognitive disorder due to AD
- Candidate for manual medicine in general
- Obtain consent

RELATIVE CONTRAINDICATIONS

- Recent cerebral vascular event (<6wks)
- Acute paranoia or other delusions

ABSOLUTE CONTRAINDICATIONS

- Patient’s refusal to be touched or receive manual medicine

GENERAL OSTEOPATHIC APPROACH

- Optimize Structure and Function
- Whole Body Assessment
- Sympathetic Nervous System
- Lymphatics and Secondary Respiration
- Visceral
- Primary Respiration

VASCULATURE TREATMENT

- Venous
  - Dural Venous Sinuses & Jugular Vein
- Glial Vascular Pathway - Glymphatic System
- Arterial
  - Vertebral Arteries
    - Basilar, Cerebellar Arteries, Posterior Cerebral Arteries, Posterior Communicating Arteries
  - Internal Carotid Arteries
    - Middle Cerebral Arteries, Anterior Cerebral Arteries, Anterior Communicating Artery

BRAIN PARENCHYMA TREATMENT

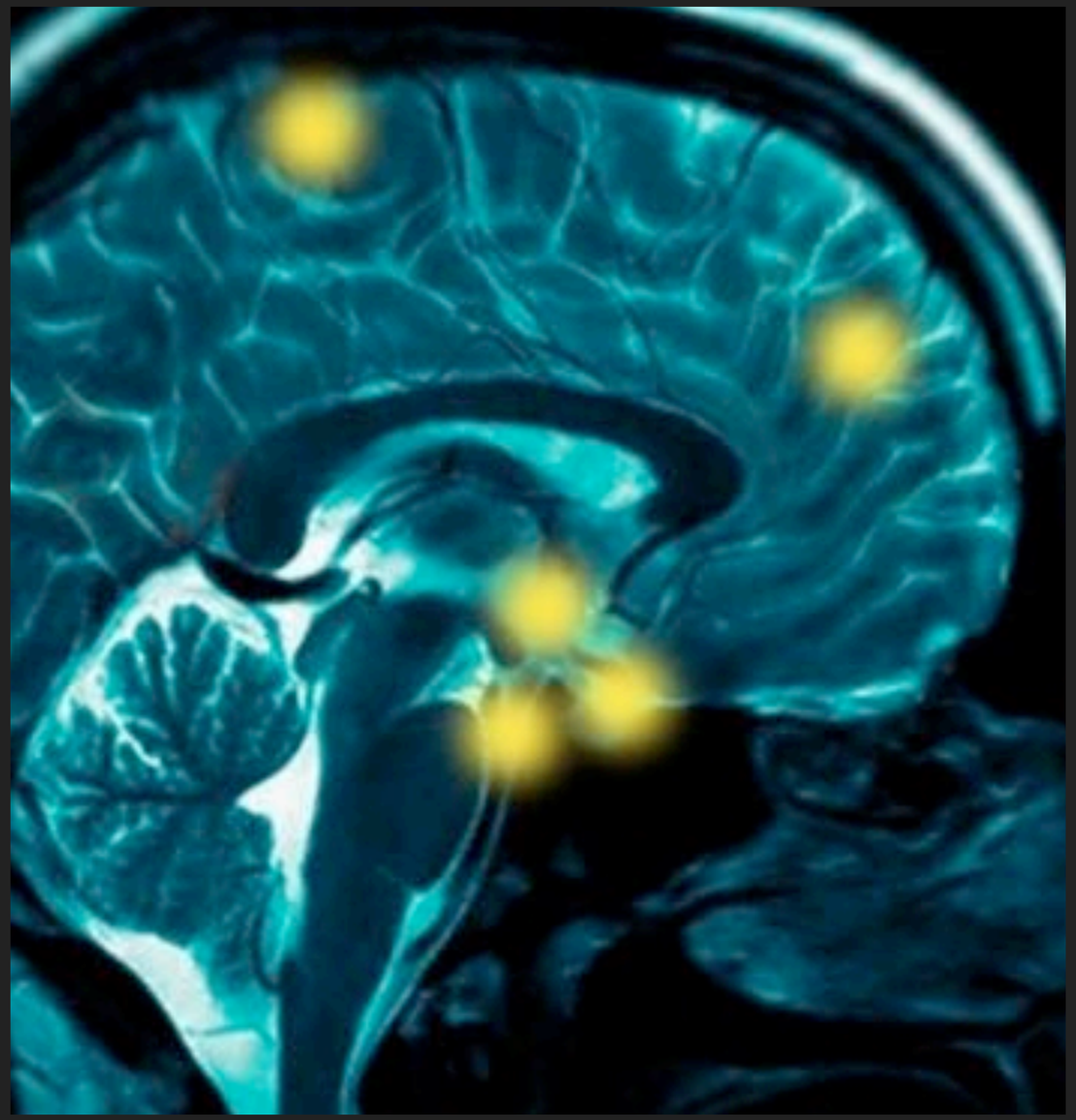
- Biomechanic- Structural Continuum
  - Palpate to brain foci
- Seek Health First
- Assess Somatic Dysfunction- TART
- Divided Attention (Health and Dysfunction)
- Reassess

OSTEOPATHY AND THE BRAIN COURSES

- OsteopathicPsychiatry.com
- Cognitive Disorders Course
  - Frankfurt Germany May 2023
- Interested in a course:
  - thuzij@thetrinityinstitute.com

OTHER OPTIONS

- Cranial Vertebrae
  - Charlotte Weaver DO
- Biodynamics
  - James Jelaous DO
- Brain curriculum
  - Bruno Chikly MD, DO



MAY GOD BLESS YOU ON
YOUR OSTEOPATHIC JOURNEY

THE END