

RAZONAMIENTO CLÍNICO

EL DIAGNÓSTICO DIFERENCIAL ABORDANDO EL SISTEMA NERVIOSO AUTÓNOMO EN PACIENTES CRÓNICOS Y COMPLEJOS

Para profesionales de la salud

Prof. MsC. Fit. Ost. Luis Gonzaga de Moura Junior



RAZONAMIENTO CLÍNICO

Recomendaciones antes de empezar:

- Silencia las notificaciones en tu ordenador y móvil
- Prepara libreta y boli para tomar notas
- Usa el chat para preguntar, conectar y ayudar
- No busques terapeutas en el chat, no es el lugar adecuado
- Compártenos tus aprendizajes en Instagram

IMPORTANTE: Sígueme en Instagram @luisgonzagafisioosteopatia para mantenerte actualizado.

¿Qué es?

El Razonamiento clínico -
pacientes crónicos y complejos

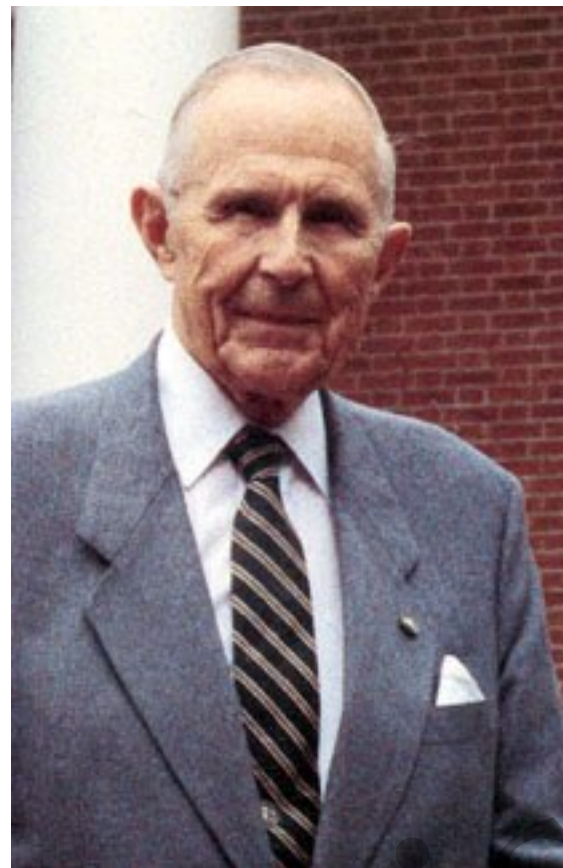
- El razonamiento clínico describe el proceso mental que utilizan los profesionales de la salud para hacer un diagnóstico basado en la historia clínica, la exploración física y las investigaciones de un paciente (Eva, 2005).
- Además del razonamiento diagnóstico, el razonamiento de gestión es el proceso implicado en el razonamiento sobre las decisiones de abordaje del paciente (Cook et al., 2023).

El proceso diagnóstico

“Si escuchas cascos, piensa en caballos, no en cebras”.

Theodore Woodward

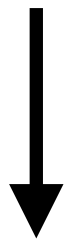
Diagnóstico nosológico



El proceso diagnóstico

Diagnóstico nosológico

Fisioterapeuta



Dolor lumbar crónico

Gastroenterólogo



GERD

Nutricionista



Obesidad

Dentista



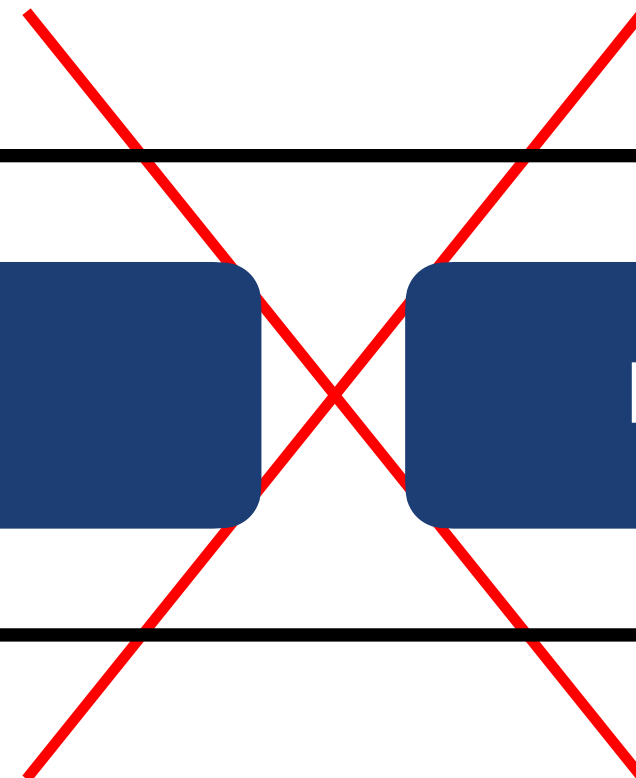
Periodontitis

Alteración del sueño

Laringitis

Dolor Cervical

IBS



El proceso diagnóstico

Diagnóstico nosológico

Nuevas
herramientas

Multimorbilidad

Condiciones
Disfuncionales

Education of clinical reasoning in
patients with multimorbidity: a
scoping review and perspectives
for technology-enhanced learning

Razonamiento clínico -
paciente complejo

Internos del individuo

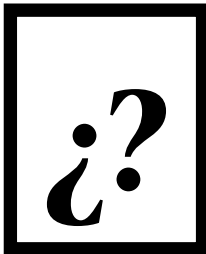
Factores externos

Factores de relación



El Razonamiento clínico - pacientes crónicos y complejos

Nuevas herramientas



DOI: 10.1111/psyp.13910
ORIGINAL ARTICLE
PSYCHOPHYSIOLOGY
WILEY

Pre-pandemic autonomic nervous system activity predicts mood regulation expectancies during COVID-19 in Israel

Clinical and Experimental Medicine
https://doi.org/10.1007/s10238-023-01057-6
RESEARCH
Check for updates

Five cluster classifications of long COVID and their background factors: A cross-sectional study in Japan

www.nature.com/scientificreports

scientific reports

Check for updates

OPEN
Impact of long COVID on the heart rate variability at rest and during deep breathing maneuver

Contents lists available at ScienceDirect
EBioMedicine
journal homepage: www.ebiomedicine.com
ELSEVIER

Research Paper
Autonomic Dysfunction Precedes Development of Rheumatoid Arthritis: A Prospective Cohort Study
CrossMark

Multimorbilidad

Internos del individuo

Condiciones
Disfuncionales

frontiers
in Physiology

REVIEW
published: 10 March 2020
doi: 10.3389/fphys.2020.00200

Homeostasis: The Underappreciated and Far Too Often Ignored Central Organizing Principle of Physiology

Review > Pain Pract. 2024 Jan;24(1):211-230. doi: 10.1111/papr.13294. Epub 2023 Sep 3.

Heart rate variability in adults with chronic musculoskeletal pain: A systematic review

Equilibrio Simpato-Vagal - HRV

Journal of
Clinical Medicine

MDPI

Article
First Evaluation of an Index of Low Vagally-Mediated Heart Rate Variability as a Marker of Health Risks in Human Adults: Proof of Concept

El Razonamiento clínico - pacientes crónicos y complejos

Nuevas herramientas

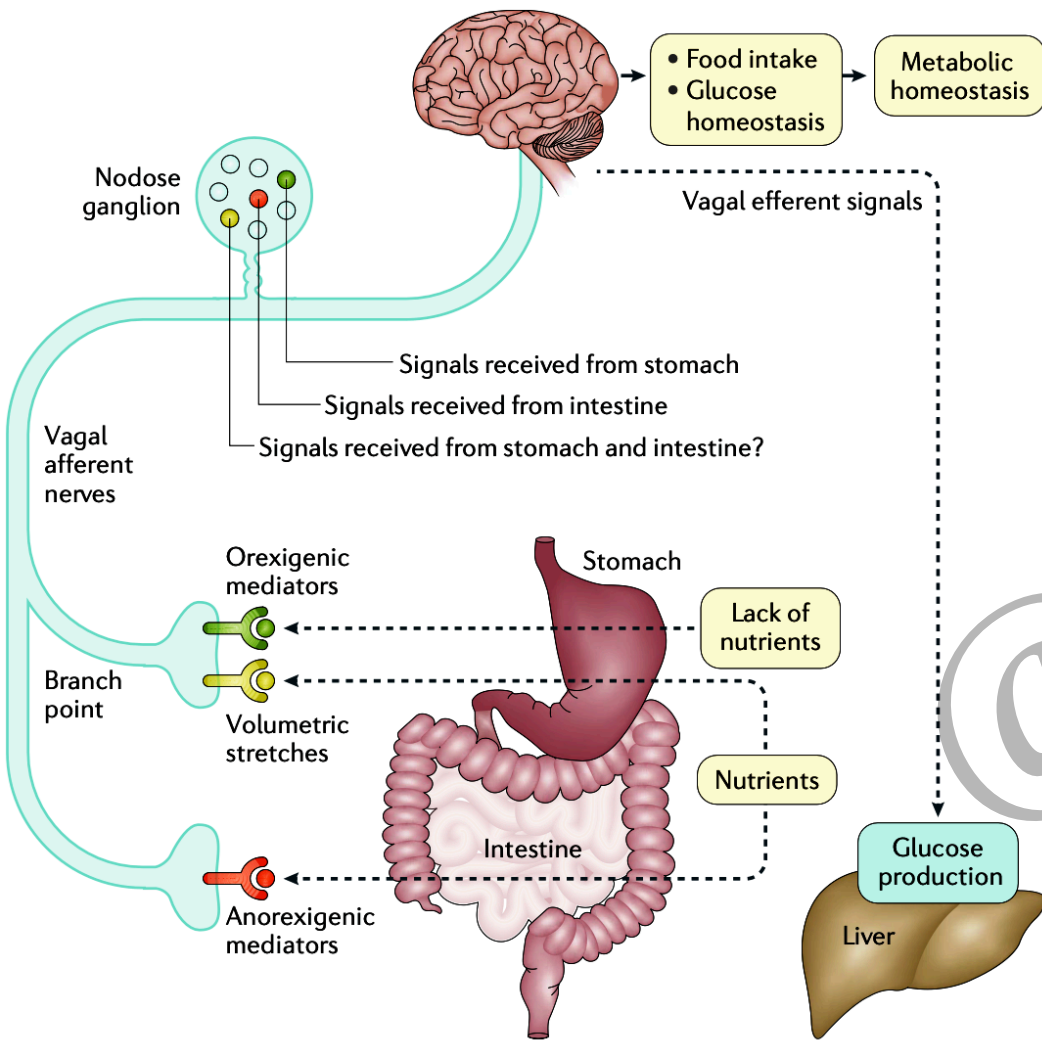
SCIENTIFIC REPORTS

OPEN The role of the baroreflex and parasympathetic nervous system in fructose-induced cardiac and metabolic alterations

Received: 4 January 2018
Accepted: 18 May 2018
First published: 30 July 2018

REVIEWS

The metabolic role of vagal afferent innervation



Neuroscience and Biobehavioral Reviews 33 (2009) 81–88

Contents lists available at ScienceDirect

Neuroscience and Biobehavioral Reviews

journal homepage: www.elsevier.com/locate/neubiorev

Review

Claude Bernard and the heart–brain connection: Further elaboration of a model of neurovisceral integration

Contents lists available at ScienceDirect

Neurobiology of Pain

journal homepage: www.elsevier.com/locate/ynpai

Mini Review

Do the psychological effects of vagus nerve stimulation partially mediate vagal pain modulation?

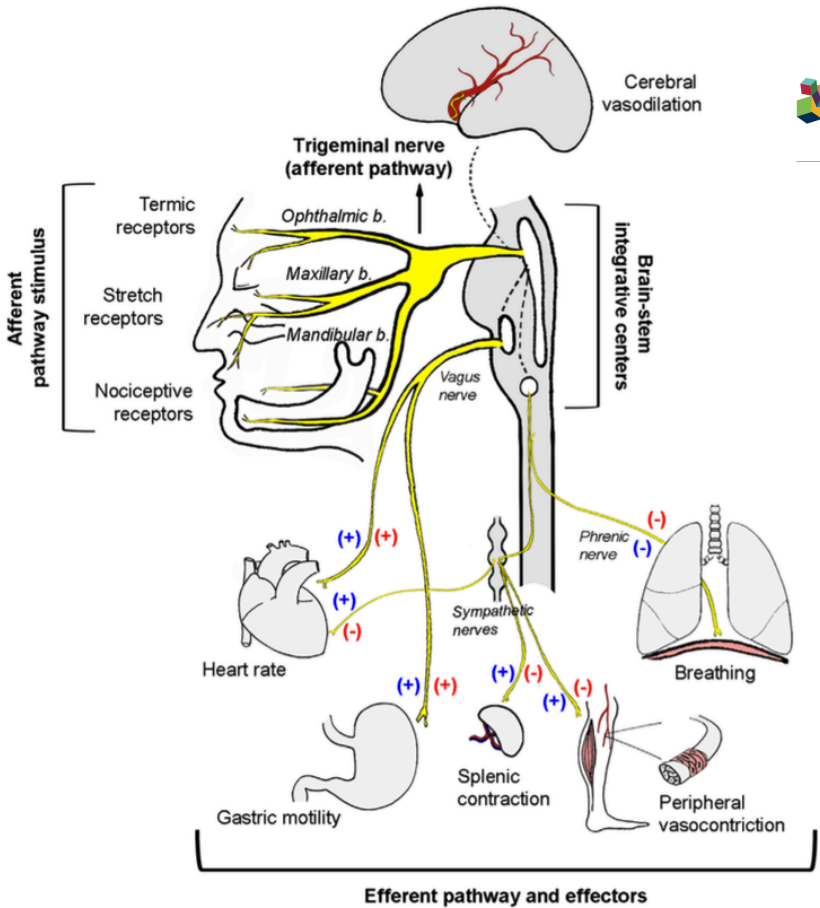
frontiers in Neuroscience

MINI REVIEW
published: 09 July 2019
doi: 10.3389/fnins.2019.00710

Heart Rate Variability and Cognitive Function: A Systematic Review

> Pain Med. 2015 Dec;16(12):2261–70. doi: 10.1111/pme.12825. Epub 2015 May 29.

The Association of (Effective and Ineffective) Analgesic Intake, Pain Interference and Heart Rate Variability in a Cross-Sectional Occupational Sample



Antagonistic and Synergistic Activation of Cardiovascular Vagal and Sympathetic Motor Outflows in Trigeminal Reflexes

OPEN Visualizing the trigeminovagal complex in the human medulla by combining *ex-vivo* ultra-high resolution structural MRI and polarized light imaging microscopy

Received: 18 February 2019
Accepted: 22 July 2019
Published online: 05 August 2019

National Institutes of Health

NIH Public Access

Author Manuscript

J Pain. Author manuscript; available in PMC 2014 December 01.

Published in final edited form as:
J Pain. 2013 December ; 14(12 0): . doi:10.1016/j.jpain.2013.06.001.

General health status and incidence of first-onset temporomandibular disorder: OPPERA prospective cohort study

frontiers in Neurology

MINI REVIEW
published: 21 February 2017
doi: 10.3389/fneur.2017.00052

El Razonamiento clínico - pacientes crónicos y complejos

Nuevas herramientas

Systematic Review

e Pneumogastric (Vagus) Nerve Activity Indexed by Heart Rate Variability in Chronic Pain Patients Compared to Healthy Controls: A Systematic Review and Meta-Analysis

[Review](#) > [Cephalalgia](#). 2016 Mar;36(3):265-78. doi: 10.1177/0333102415583989. Epub 2015 May 11.

Vagally mediated heart rate variability in headache patients--a systematic review and meta-analysis

REVIEW

Improvements in heart rate variability with exercise therapy



HHS Public Access

Author manuscript

J Urol. Author manuscript; available in PMC 2022 January 12.

Published in final edited form as:

J Urol. 2015 November ; 194(5): 1289–1294. doi:10.1016/j.juro.2015.04.101.

Effects of Chronic Pelvic Pain on Heart Rate Variability in Women



OPEN



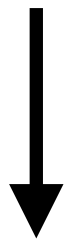
Night time heart rate predicts next-day pain in fibromyalgia and primary back pain



El proceso diagnóstico

Diagnóstico nosológico

Fisioterapeuta



Dolor lumbar crónico

Gastroenterólogo



GERD

Nutricionista



Obesidad

Dentista



Periodontitis

Alteración del sueño

Laringitis

Dolor Cervical

IBS

El Razonamiento clínico - pacientes crónicos y complejos

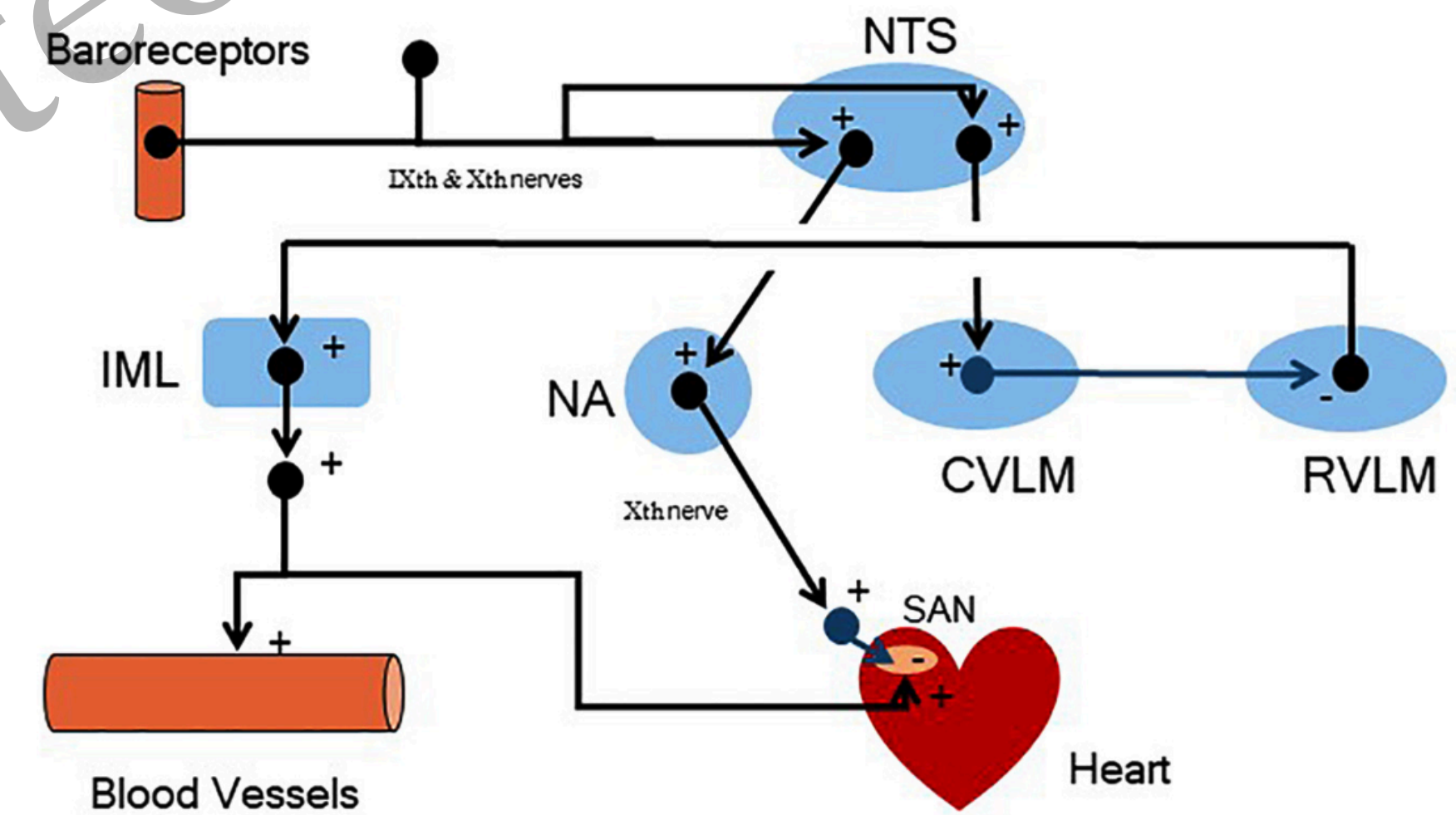
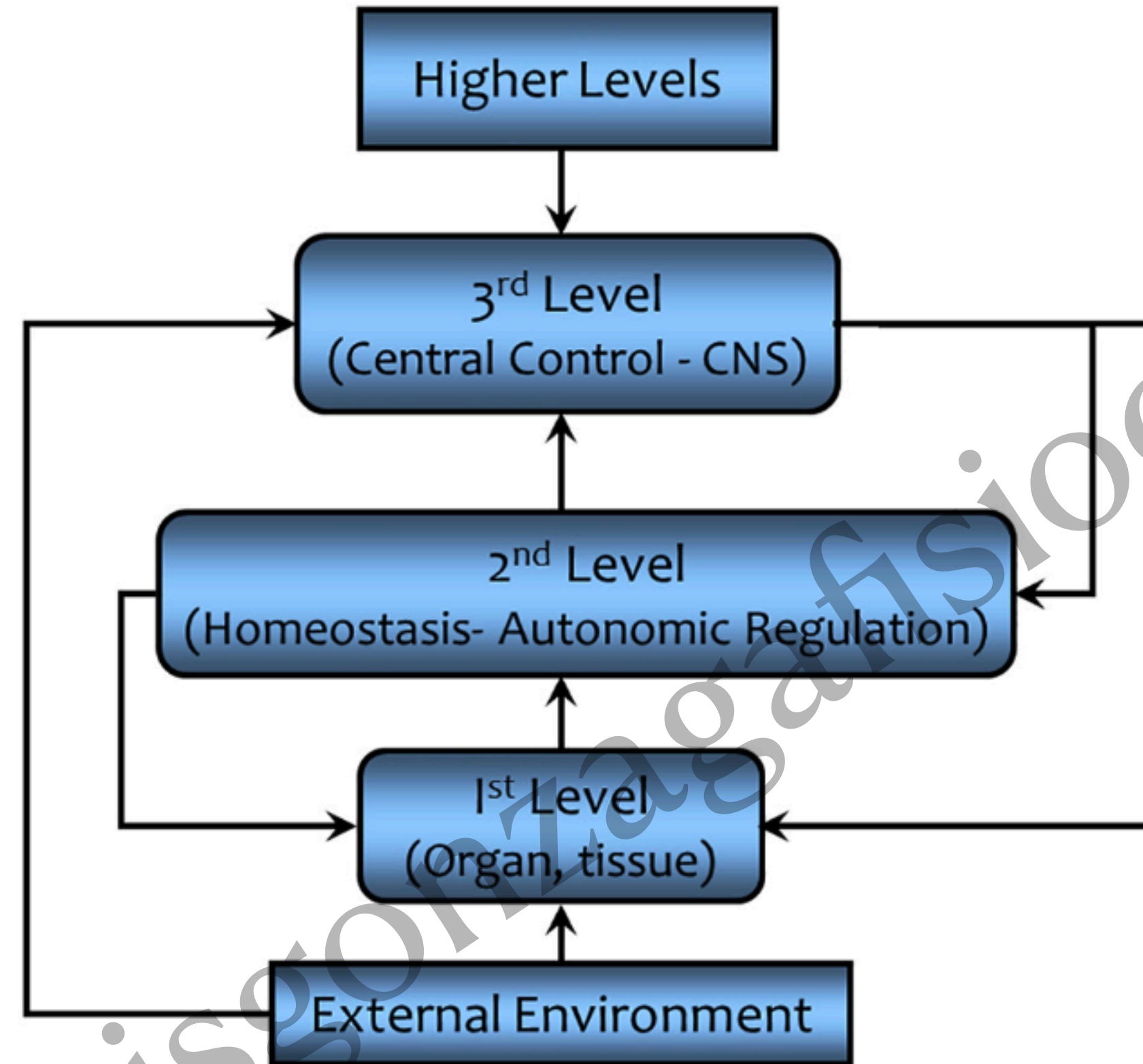
Nuevas herramientas

Equilibrio
Simpato-Vagal -
HRV

Multimorbilidad

Internos del individuo

Condiciones
Disfuncionales



El Razonamiento clínico - pacientes crónicos y complejos

Equilibrio
Simpato-Vagal -
HRV

Multimorbilidad

Internos del individuo

Condiciones
Disfuncionales

A

Agotamiento

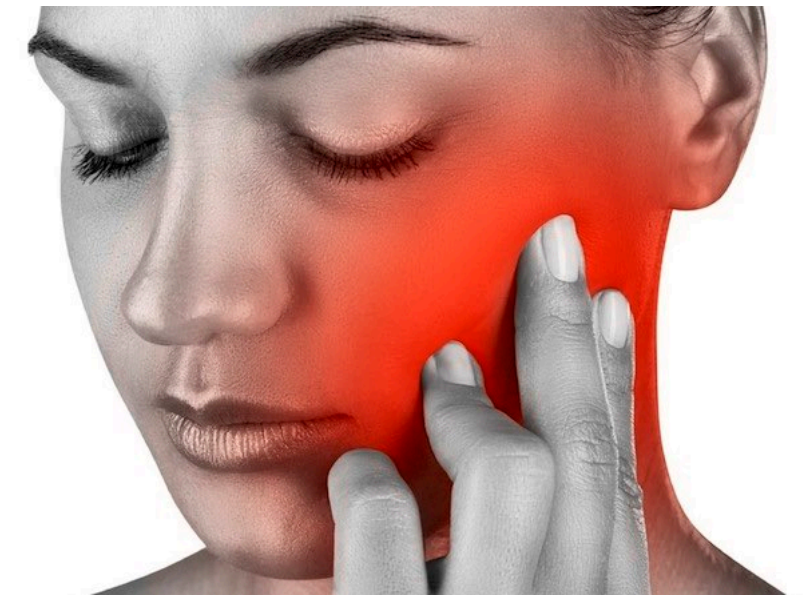
Insomnio

Cansancio

Estrés

IMC > 30

B



El Razonamiento clínico - pacientes crónicos y complejos

Equilibrio
Simpato-Vagal -
HRV

A

Multimorbilidad

Internos del individuo

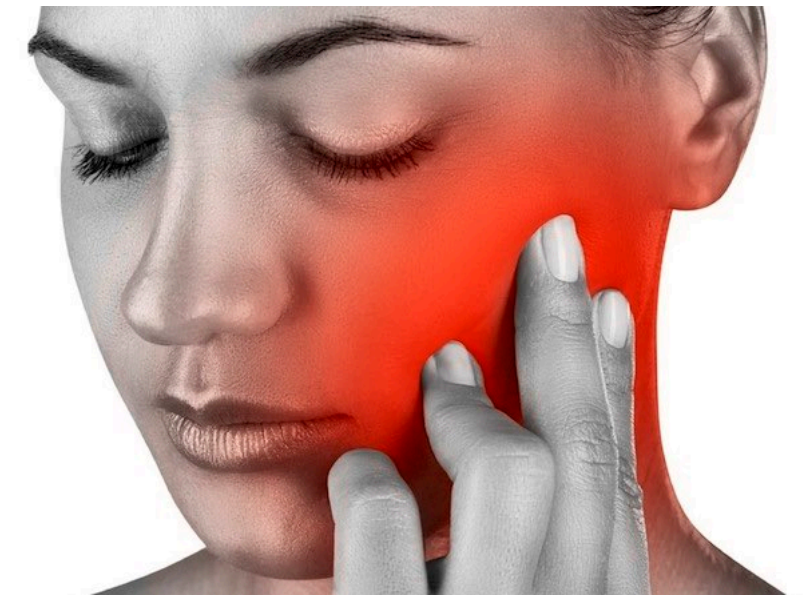
Condiciones
Disfuncionales

B

GERD

BGI

Periodontitis



El Razonamiento clínico - pacientes crónicos y complejos

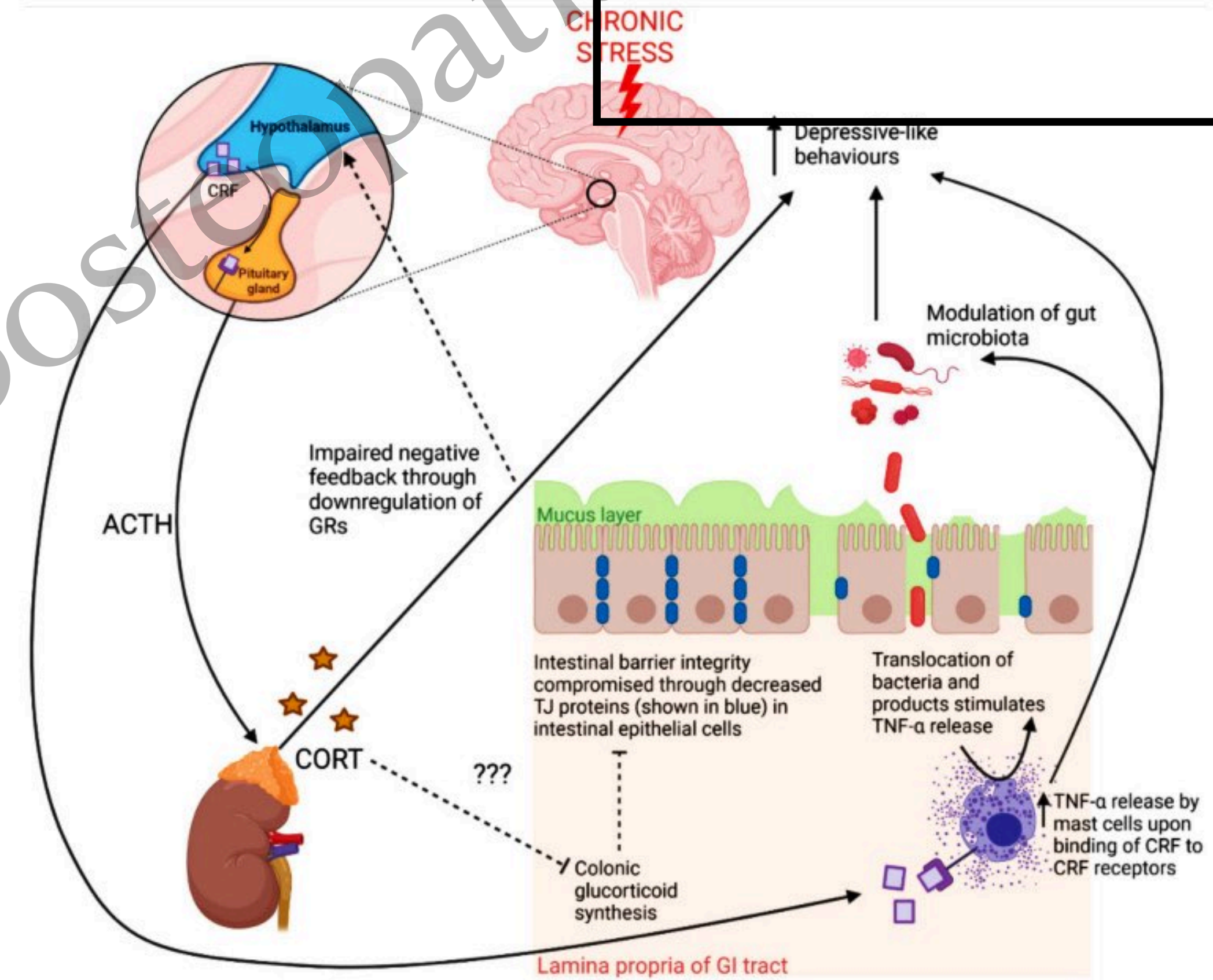
Equilibrio
Simpato-Vagal -
HRV

A



Estrés crónico

B



El Razonamiento clínico - pacientes crónicos y complejos

J Physiol 599.23 (2021) pp 5243–5260

5243

The association between pain-induced autonomic reactivity and descending pain control is mediated by the periaqueductal grey

Pain Physician 2018; 21:E409-E418 • ISSN 2150-1149

Equilibrio
Simpato-Vagal -
HRV

NIH Public Access
Author Manuscript
J Pain. Author manuscript; available in PMC 2012 November 1.

Published in final edited form as:
J Pain. 2011 November ; 12(11 Suppl): T75–T91. doi:10.1016/j.jpain.2011.09.002.

Potential Autonomic Risk Factors for Chronic TMD: Descriptive Data and Empirically Identified Domains from the OPPERA Case-Control Study

Original Article

Cephalalgia International Headache Society
An International Journal of Headache

Abnormal heart rate variability and its application in predicting treatment efficacy in patients with chronic migraine: An exploratory study

Cephalalgia
2023, Vol. 43(10) 1–15
© International Headache Society 2023
Article reuse guidelines:
sagepub.com/journals-permissions
DOI: 10.1177/03331024231206781
journals.sagepub.com/home/cep
Sage

frontiers
in Neuroscience

ORIGINAL RESEARCH
published: 27 February 2020
doi: 10.3389/fnins.2020.00147



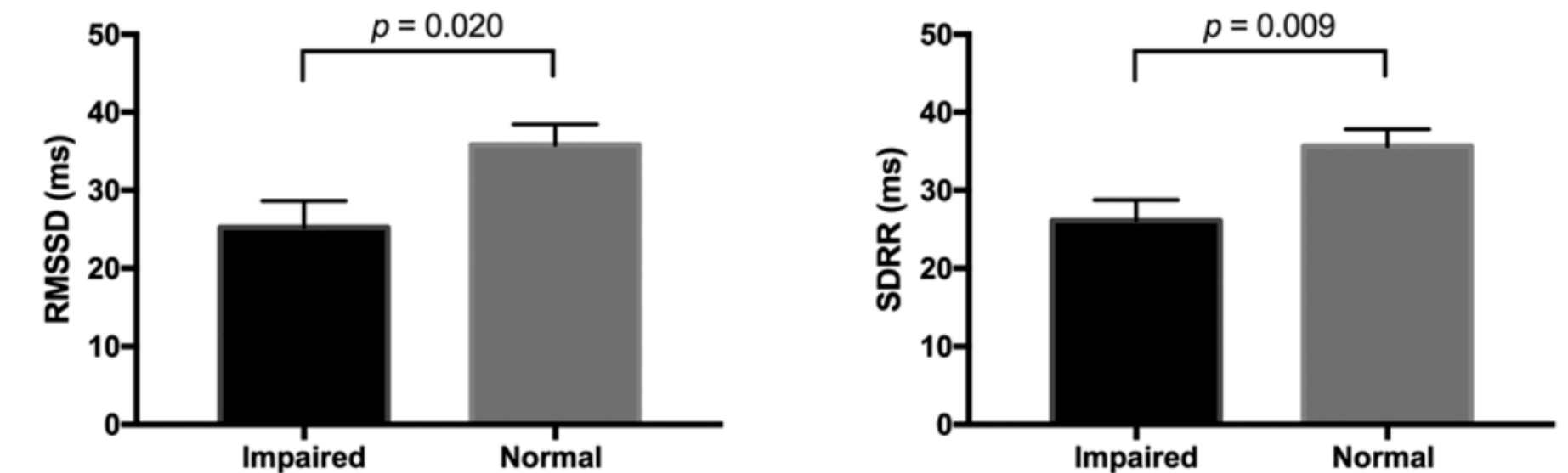
Internos del individuo

Condiciones
Disfuncionales

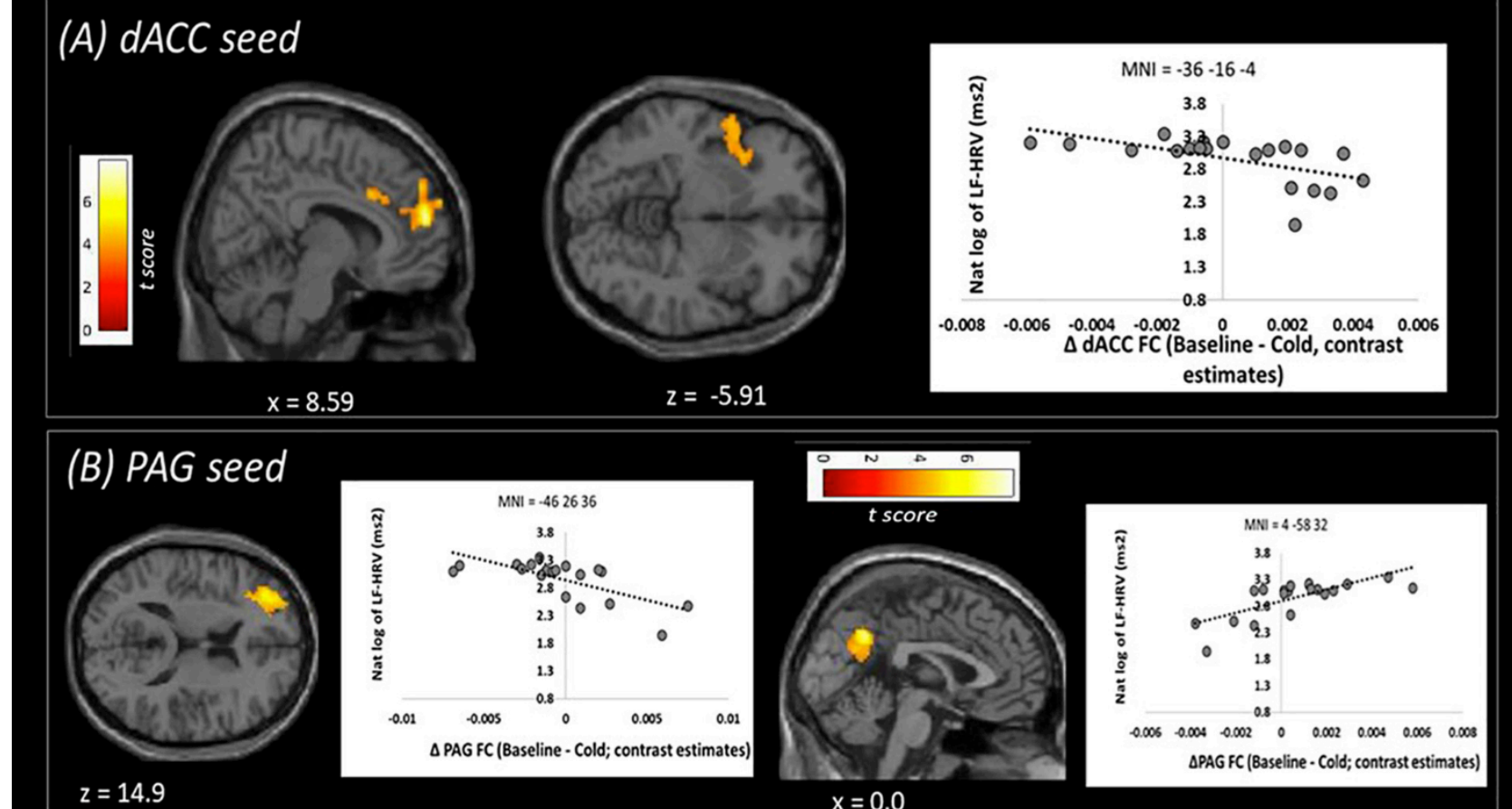
Linking Pain Sensation to the Autonomic Nervous System: The Role of the Anterior Cingulate and Periaqueductal Gray Resting-State Networks

Cross-sectional Study

Patients with Impaired Descending Nociceptive Inhibitory System Present Altered Cardiac Vagal Control at Rest



Baseline LF-HRV as predictor of the change in FC during cold pain



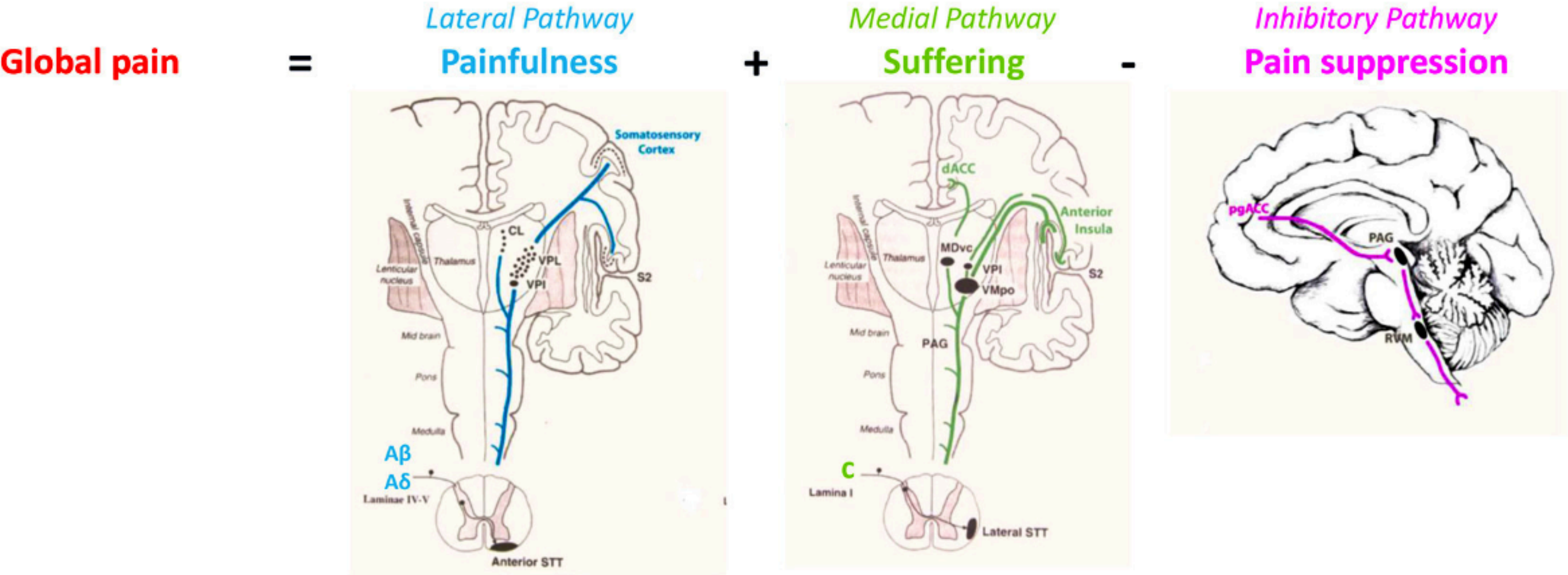
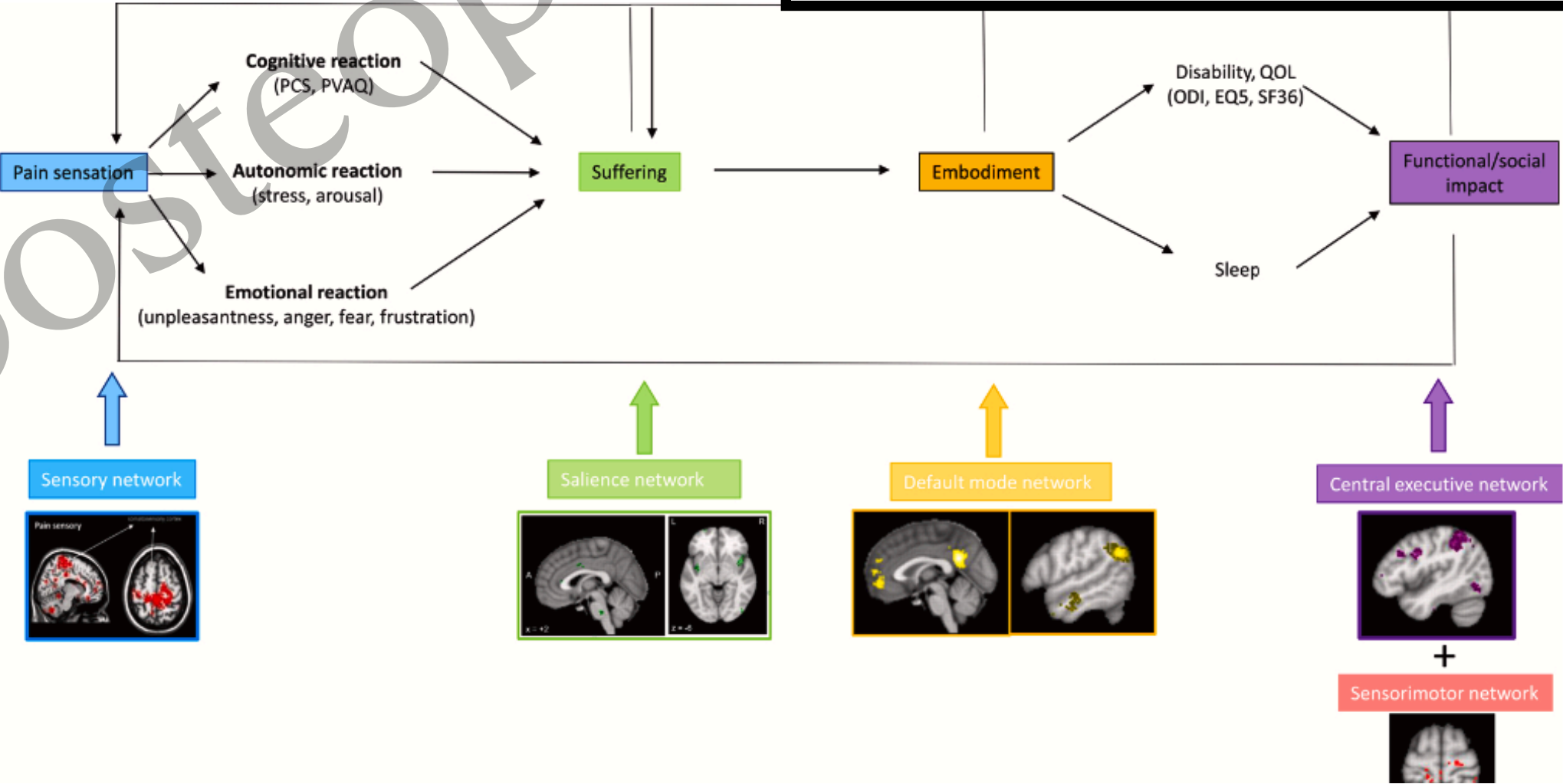
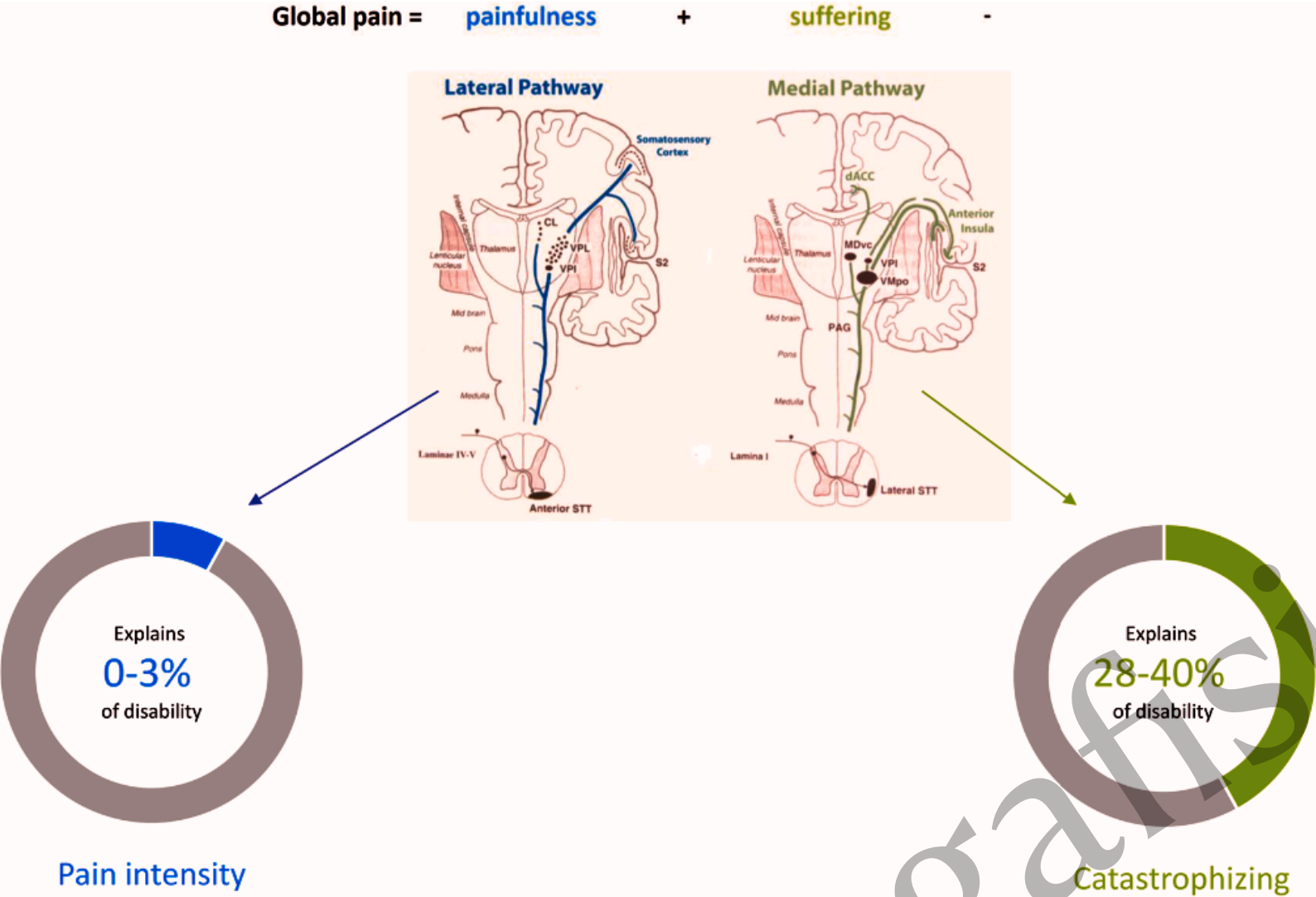
El Razonamiento clínico - pacientes crónicos y complejos

Equilibrio
Simpato-Vagal -
HRV

Multimorbilidad

Internos del individuo

Condiciones
Disfuncionales



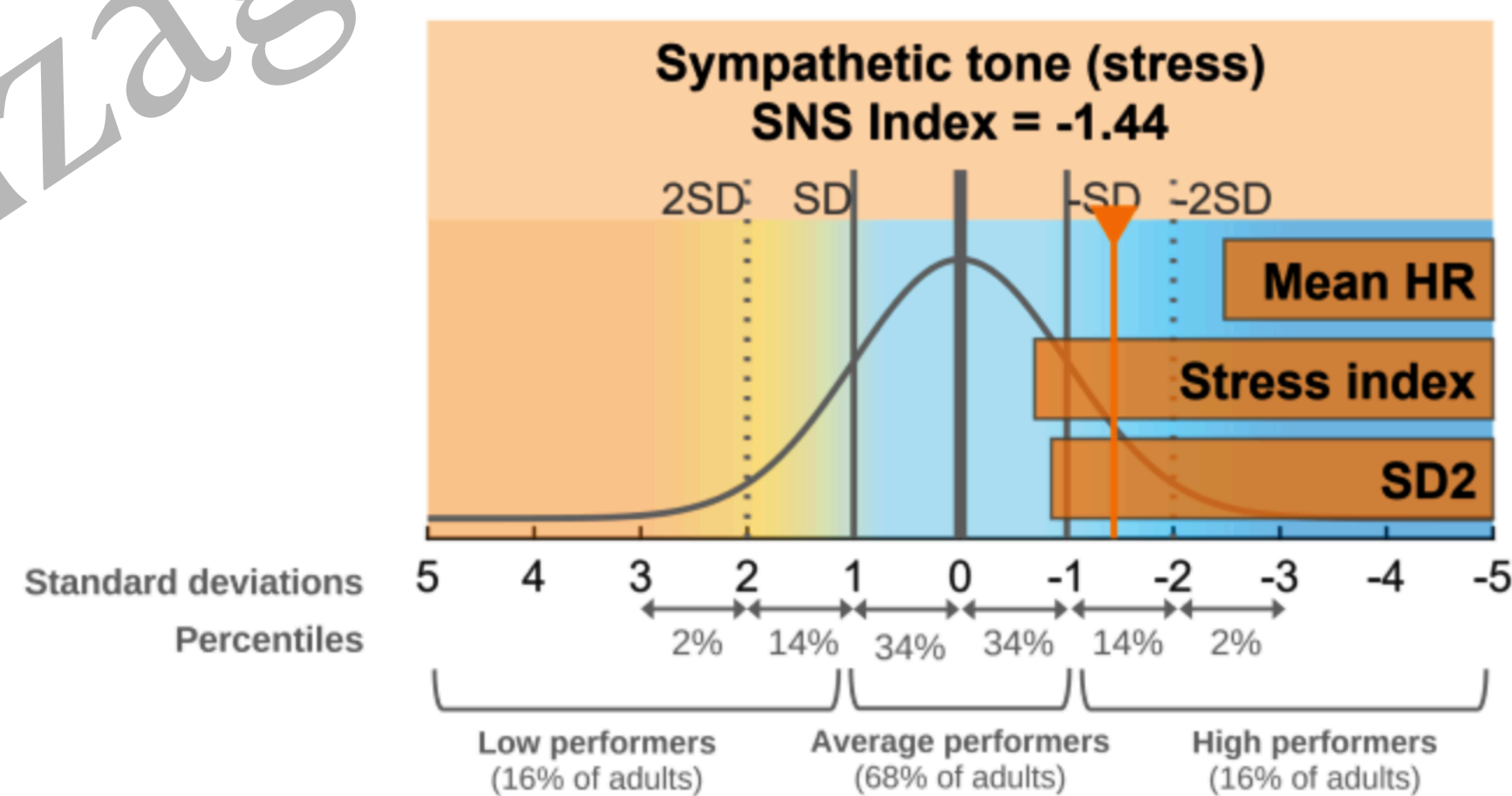
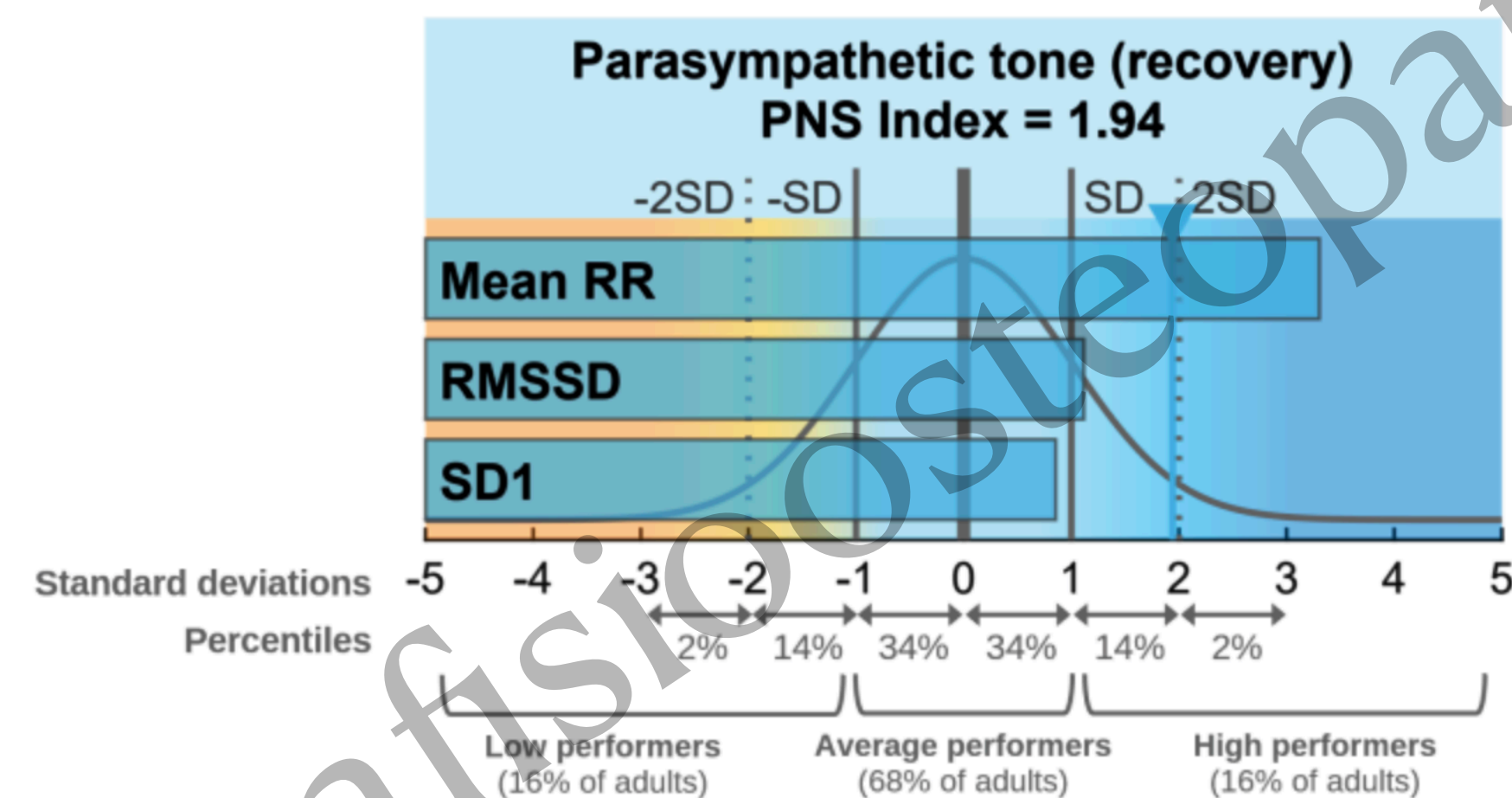
El Razonamiento clínico - pacientes crónicos y complejos

Equilibrio
Simpato-Vagal -
HRV

Multimorbilidad

Internos del individuo

Condiciones
Disfuncionales



El Razonamiento clínico - pacientes crónicos y complejos

Equilibrio
Simpato-Vagal -
HRV

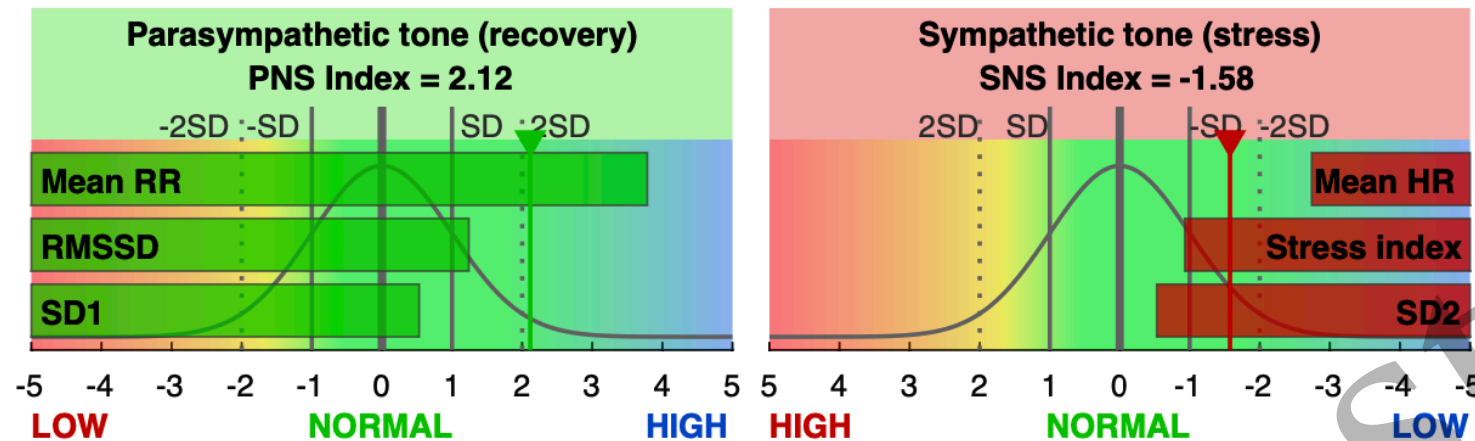
Multimorbilidad

Internos del individuo

Condiciones
Disfuncionales

A

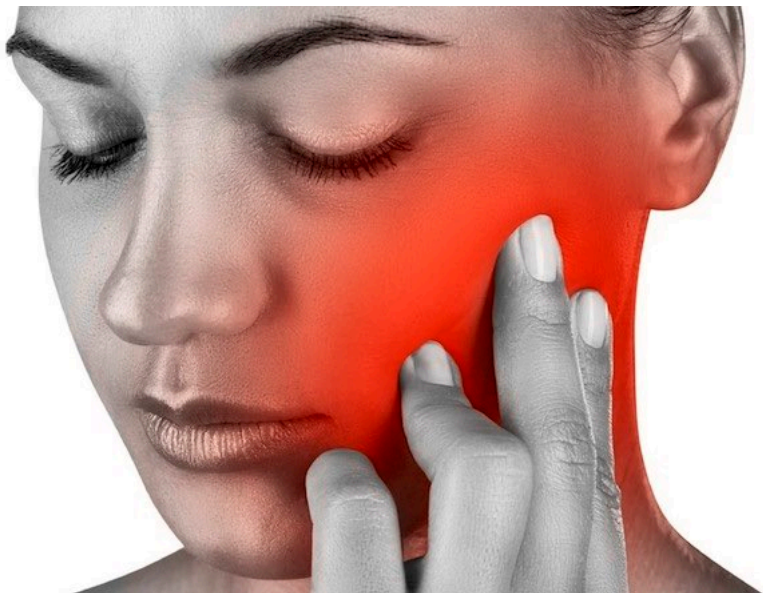
Kubios HRV - Results compared to normal (resting) values



Parasympathetic Nervous System (PNS)		
Mean RR	RMSSD	SD1
1267 ms	60.6 ms	40.5%
PNS Index = 2.12		
Sympathetic Nervous System (SNS)		
Mean HR	Stress index	SD2
47 bpm	7.3	59.5%
SNS Index = -1.58		

Time-Domain Results

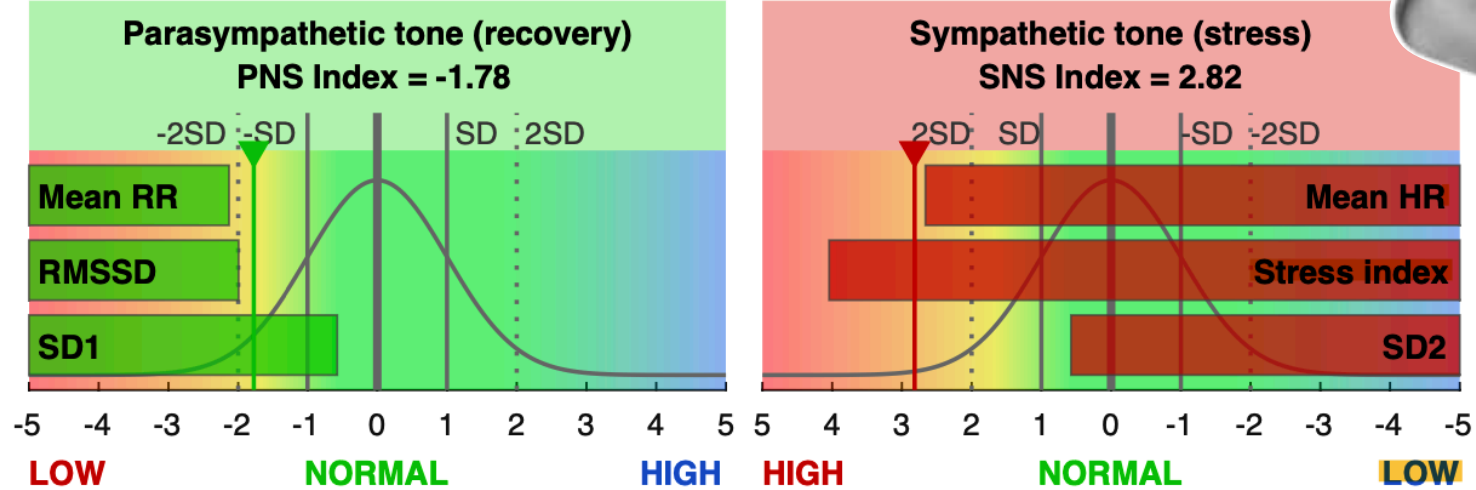
Variable	Units	Value
Mean RR*	(ms)	1267
Mean HR*	(bpm)	47
Min HR	(bpm)	42
Max HR	(bpm)	58
SDNN	(ms)	53.9
RMSSD	(ms)	60.6
NN50	(beats)	97
pNN50	(%)	41.28
RR triangular index		12.42
TINN	(ms)	240.0
Stress Index (SI)		7.3



B

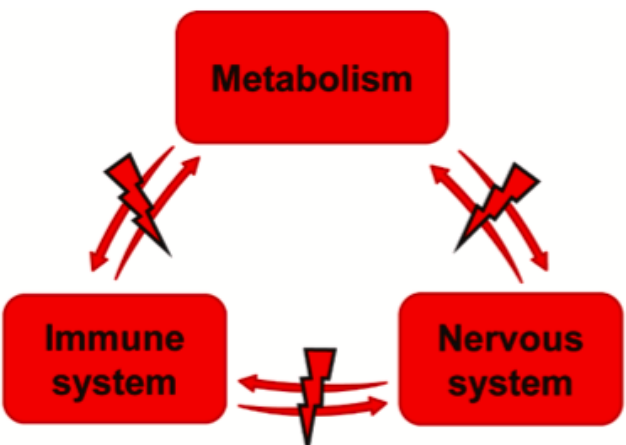
Autonomic nervous system indexes

Parasympathetic Nervous System (PNS)		
Mean RR	RMSSD	SD1
734 ms	12.1 ms	22.8%
PNS Index = -1.78		
Sympathetic Nervous System (SNS)		
Mean HR	Stress index	SD2
82 bpm	20.1	77.2%
SNS Index = 2.82		



Time-Domain Results

Variable	Units	Value
Mean RR*	(ms)	734
Mean HR*	(bpm)	82
Min HR	(bpm)	72
Max HR	(bpm)	94
SDNN	(ms)	21.3
RMSSD	(ms)	12.1
NN50	(beats)	0
pNN50	(%)	0.00
RR triangular index		6.42
TINN	(ms)	105.0
Stress Index (SI)		20.1



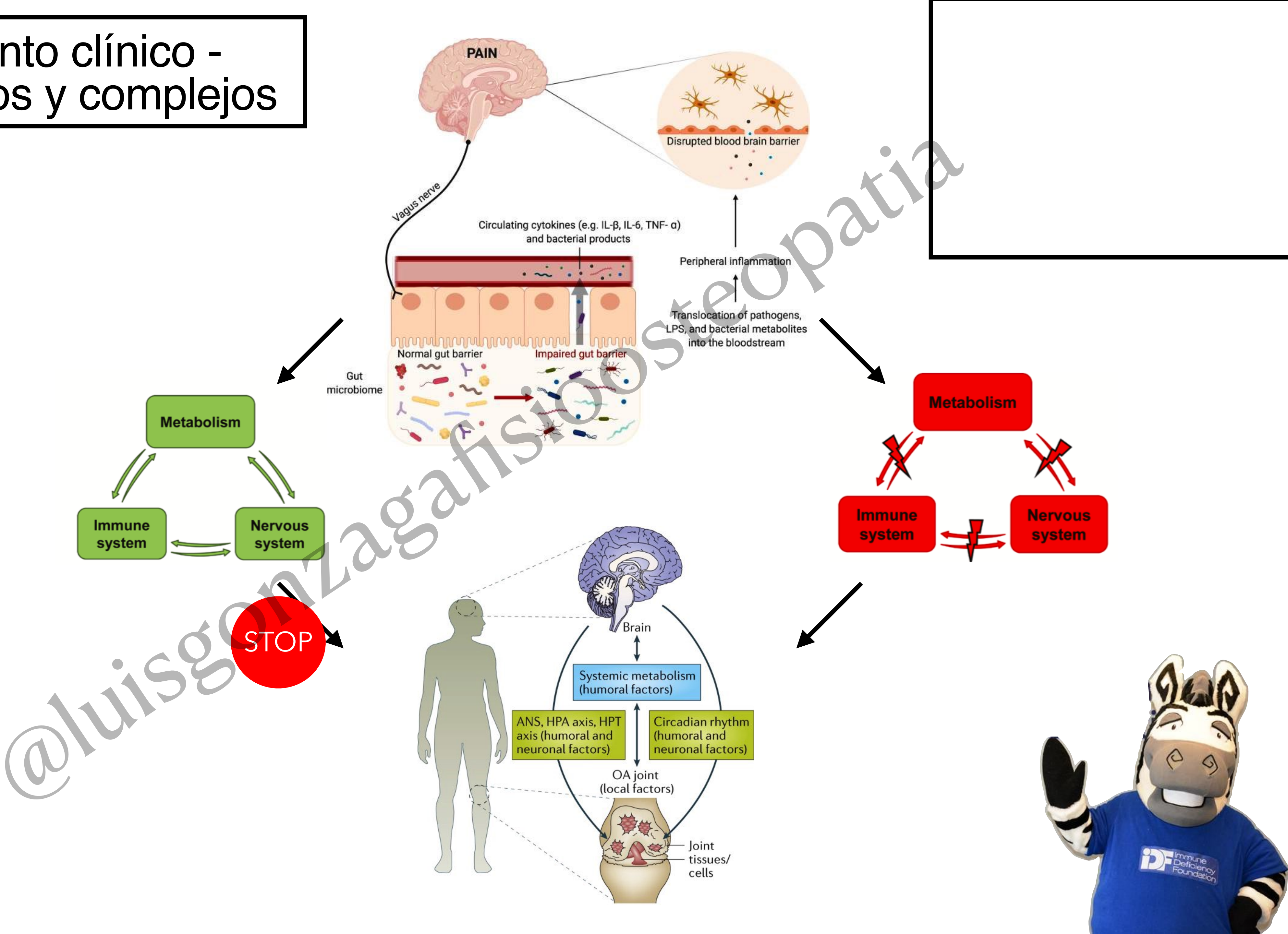
El Razonamiento clínico - pacientes crónicos y complejos

Equilibrio
Simpato-Vagal -
HRV

Multimorbilidad

Internos del individuo

Condiciones
Disfuncionales



El Razonamiento clínico - pacientes crónicos y complejos

Equilibrio
Simpato-Vagal -
HRV

Sedestación

Supino

Ortostasis

Lo más importante...

Agudo

¿?

Crónico

Basal

Reactividad

Recovery

¿Cuál es la pregunta que quieres responder?



El Razonamiento clínico - pacientes crónicos y complejos

A

Dolor lumbar crónico

GERD

Obesidad

Periodontitis

Alteración del sueño

Laringitis

Dolor Cervical

IBS

B

