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# Mindful movements as classroom-based physical activity for mental health development


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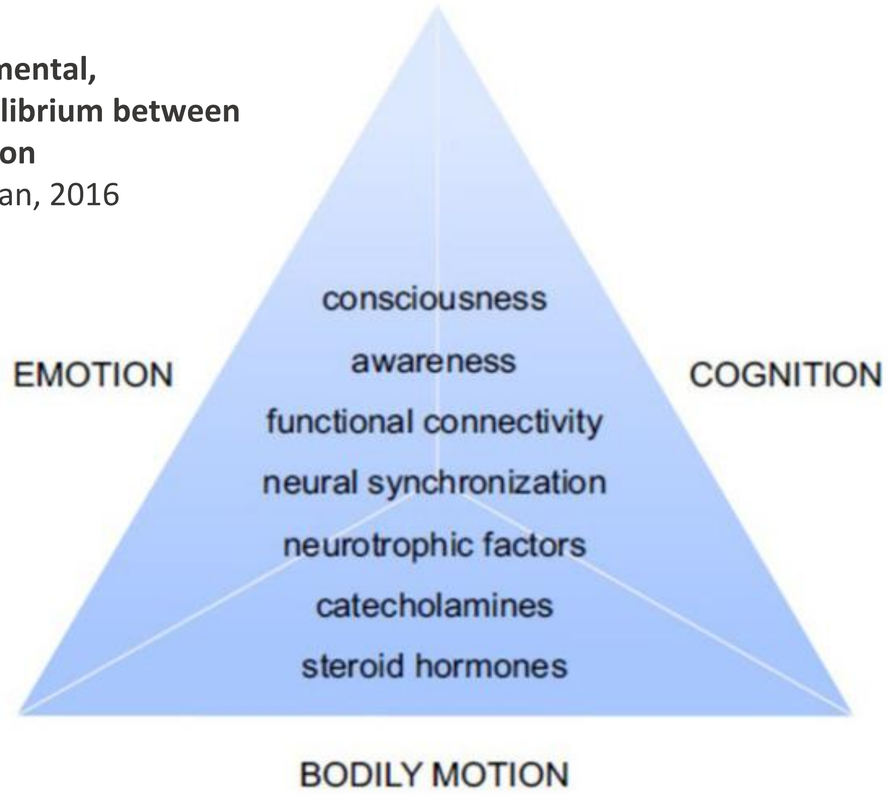
'**Health** is a state of complete **physical, mental and social well-being** and **not** merely the **absence of disease** or infirmity' (WHO, 1948: 100).

# Health crisis:
## Wellness
as a result of being disconnected from the body and environment

**Harmonious physical, emotional, mental, social and spiritual functioning requires equilibrium between the body, emotion and cognition**
(Paoletti, 2008; Pesce and Ben-Soussan, 2016
Stodden et al., 2023).




There is a growing disconnection from the body and environment
Leading to poor physical and mental health and well-being,

psychological stress, anxiety and depression, unhealthy behaviors, inflammatory diseases, accelerated epigenetic ageing

→

Inflammation and stress can lead to Neurodevelopmental challenges and Neurodegeneration (e.g. Alzheimer's Disease)

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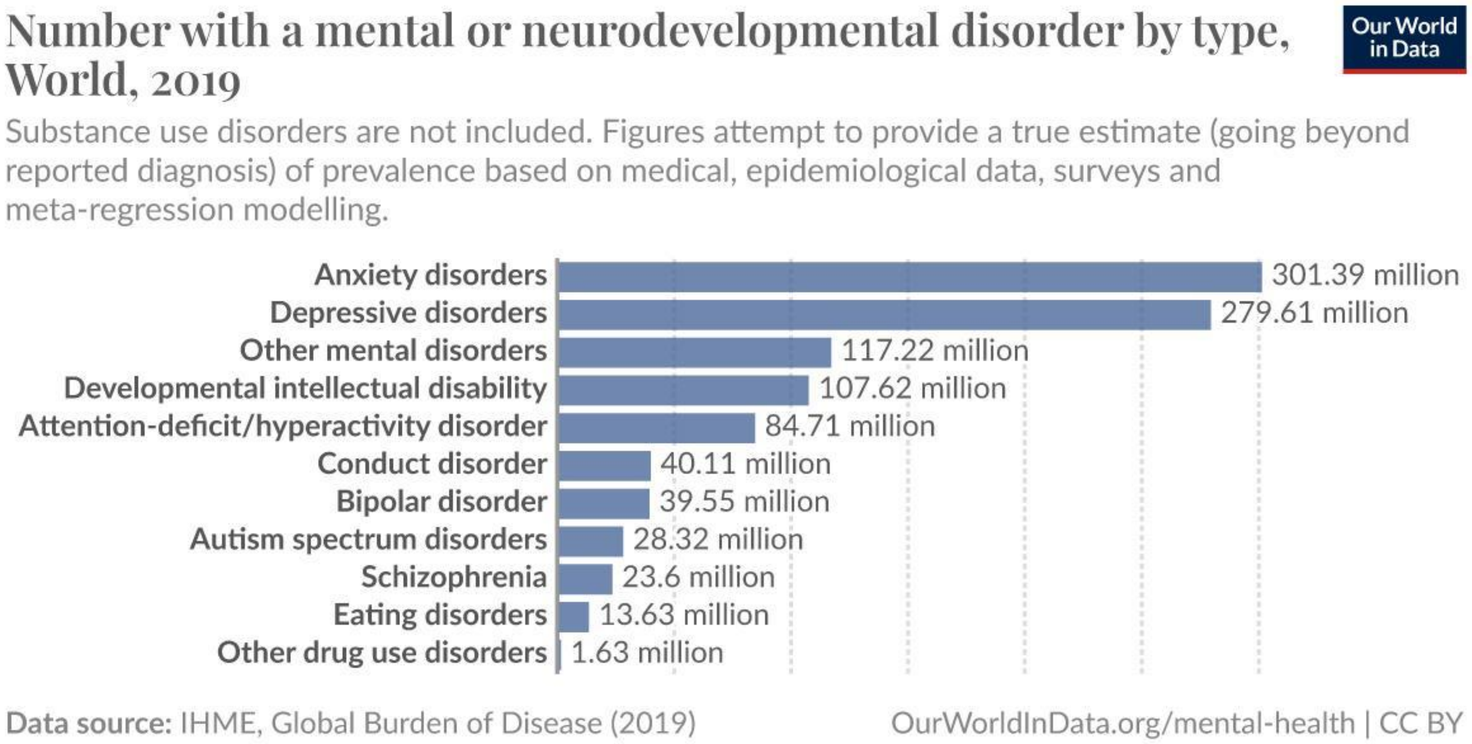
# Health crisis:
## challenges of connectivity in development and well-being

Development - Learning disabilities and developmental disorders

Estimates suggest that around **5-10% of school-aged children have a learning disability**. Boys are more likely to be diagnosed with learning disabilities than girls, with a ratio of 3:1.

With regards to Autism spectrum disorders, the latest research in 2023 from the CDC (Center for Disease Control and prevention) shows that **one in 36 children is now diagnosed with autism**.

**Depression, anxiety and lack of motivation increased following the COVID pandemic and as the technological and social media use and abuse increase**

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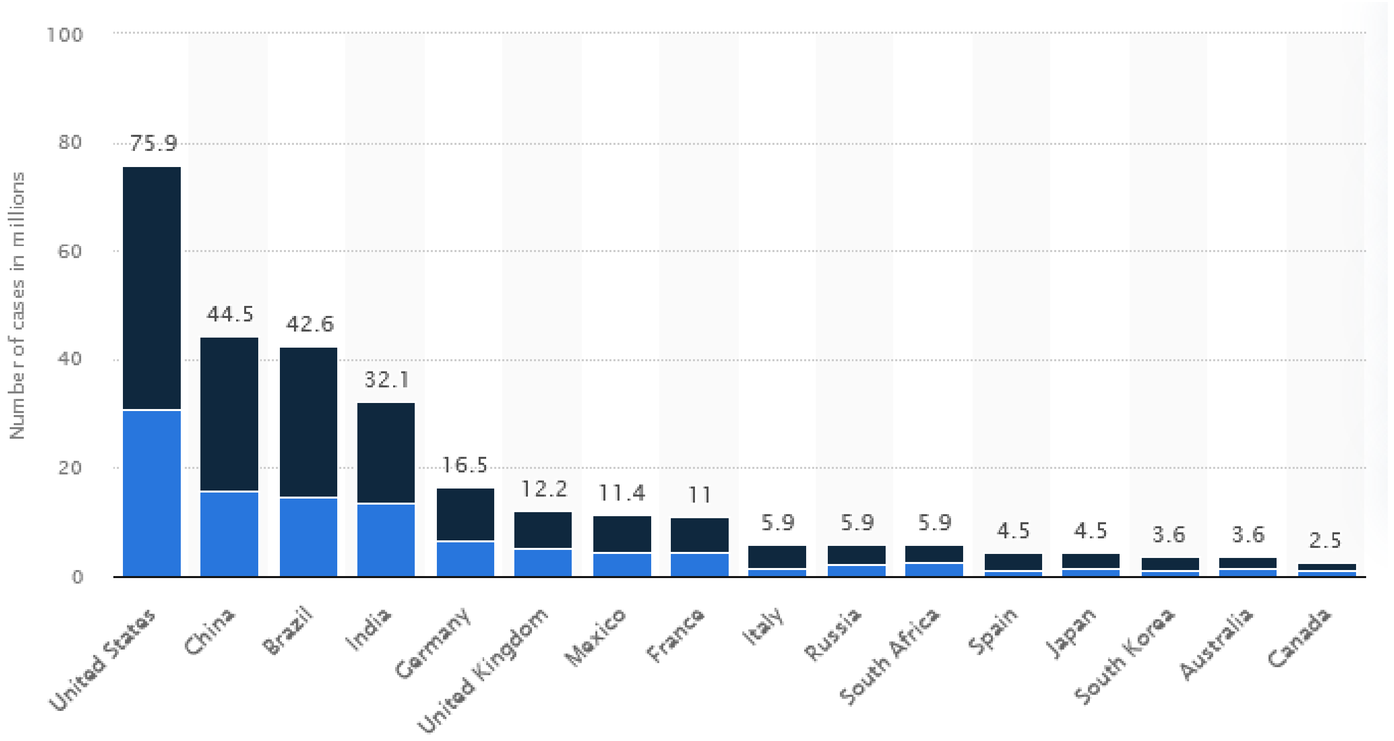
# Health crisis:
## challenges of connectivity in development and well-being

Emotional well-being

Globally, it is estimated that 5% of the population suffers from **depression** and that it has a major influence on health and social costs. In 2019, about 301 million people worldwide lived with **anxiety disorders** and 280 million suffered from depression (Institute of Health Metrics and Evaluation. Global Health Data Exchange).

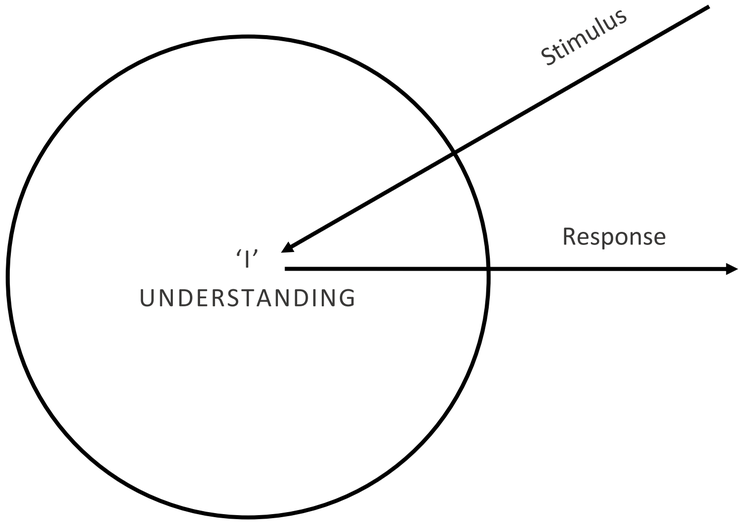
**During COVID these numbers increased**. Recent findings suggest that the COVID pandemic further increased the prevalence of anxiety and depression symptoms in the general population. In addition, evidence of emotional loneliness increased.

Importance of coping mechanisms with stress

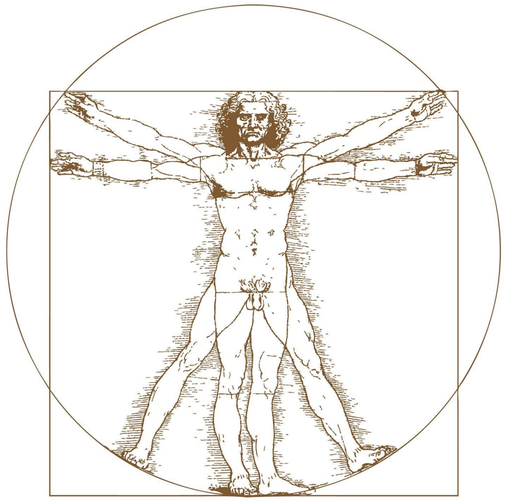



Number of cases in millions of anxiety disorders in different countries by gender (dark blue = females; light blue = males)

# Movment: Placing humans at the center




MOVING
from S*timulus-Response* automatic mode,
to *Stimulus-Understanding-Correct response*
mediated by training-induced unification and enhanced synchronization
(Paoletti, 2008)



**TRAINING**
**Training-induced increased slow wave synchronization**
(e.g. through QMT)
for better inner and outer communication and well-being

CONNECTEDNESS
The brain's and earth's ionosphere Schumann Resonance occupy a similar range of frequencies (Sentman, 2017)

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# The importance of Being Embodied

Attending to inner sensations can have beneficial physiological and psychological consequences:

- Greater vitality
- Increased mindfulness, interoception and empathy.
- Balance and coordination
- Subjective well-being
- Increased self-regulation and self-compassion
- Enhanced mood
- Reduced stress

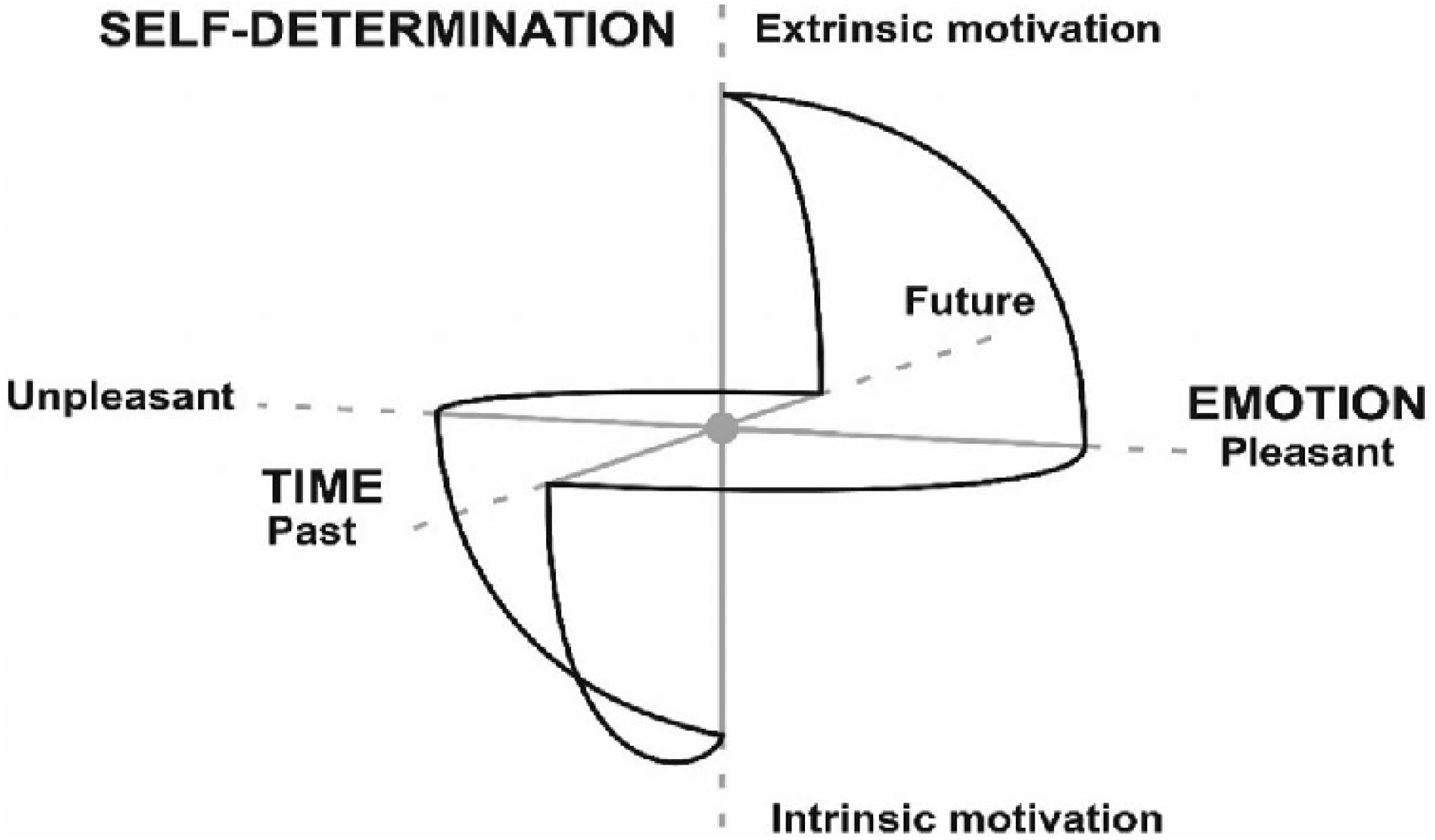
Meditation can help, but not all meditations are the same. Practices with physical, affective and cognitive components are more effective, increasing connectedness and integration:

- Reduced sense of loneliness
- Improved immune system responses and decreased inflammation
- Increased well-being
- Decreased stress and anxiety, depression, social anxiety disorders, over-identification and pain

Mind-body practices increase embodiment and slow wave neuronal synchronization

Mehling et al., 2009, Ben Soussan and Paoletti, 2024, Marson et al., 2023, Ben-Soussan et al., 2019, Brani et al., 2014, Bond et al., 2013, Impett et al., 2006, Verdone et al., 2023

# The Sphere Model of Cosciousness
## Being embodied as a voluntary act



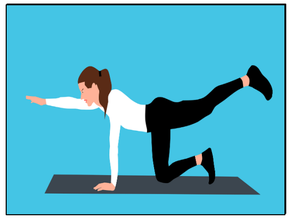
# Resolving the Health crisis

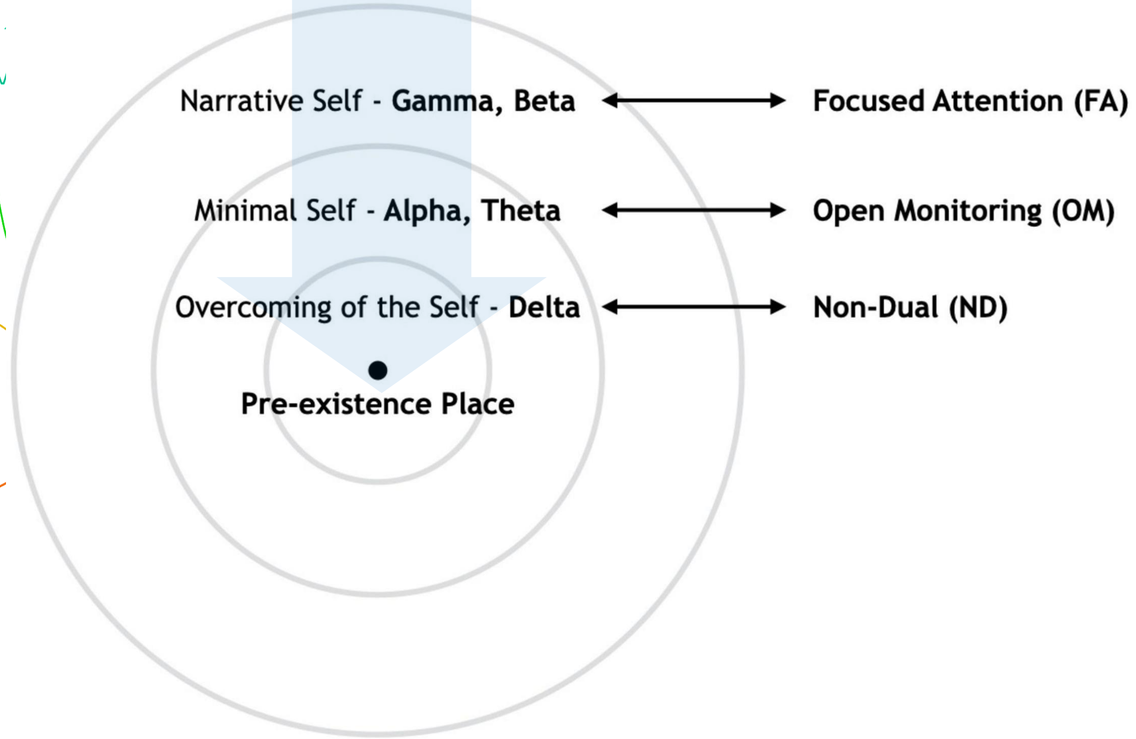
## The selves in the Sphere Model of Consciousness

The **Narrative Self** involves awareness of personal identity and its continuity through time, as well as conceptual contents

The **Minimal Self** has a short temporal extension, and is endowed with a sense of action, property, and first person non-conceptual content

In the **Overcoming of the Self** all sense of self disappears yet subjective experiences are still able to be experienced and reported



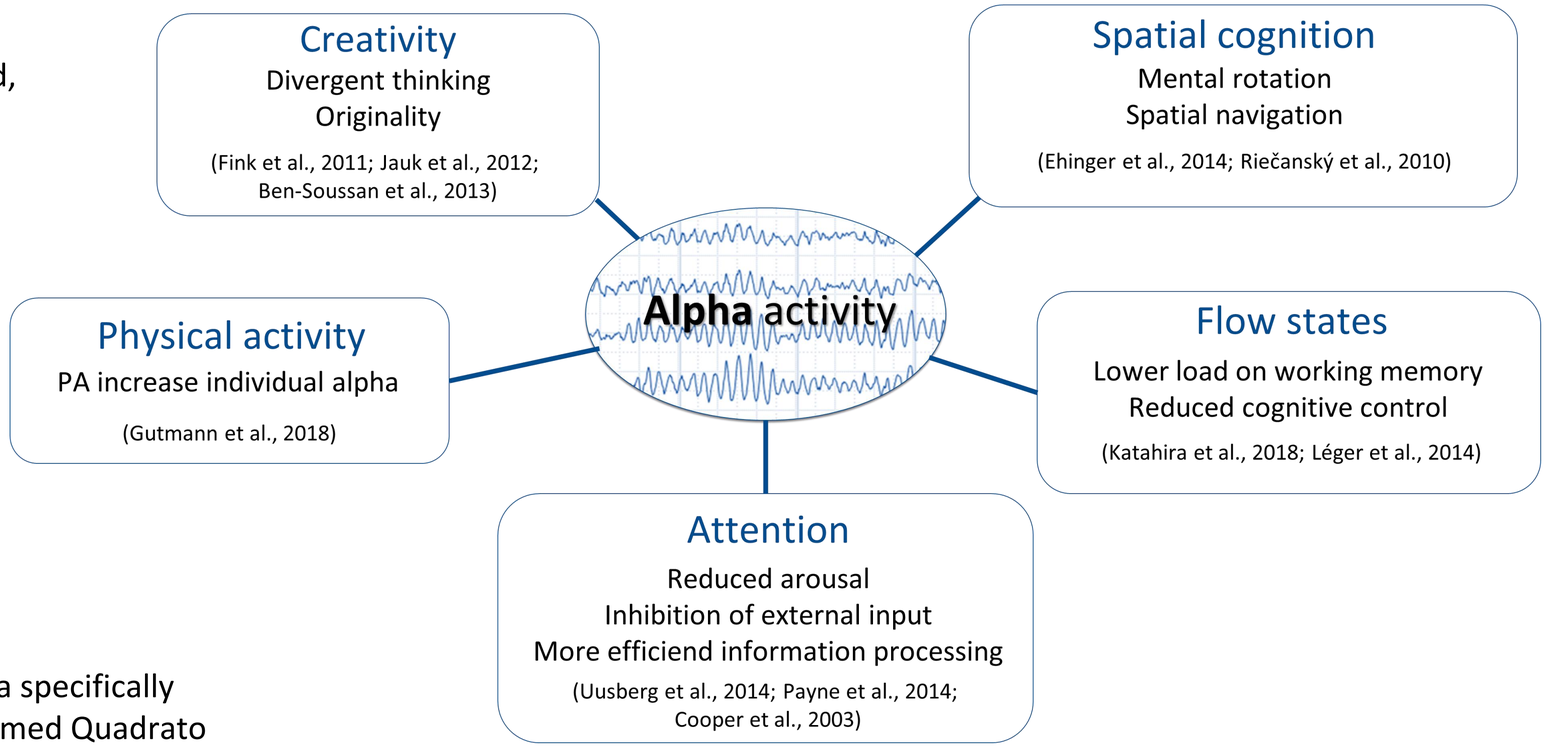




Paoletti, P., Leshem, R., Pellegrino, M., & Ben-Soussan, T. D. (2022). Tackling the electro-topography of the selves through the sphere model of consciousness. *Frontiers in Psychology*, *13*, 836290.

# Resolving the Health crisis
## Placing humans at the center

Not all practices are the same
If we want to connect better with ourselves, with nature and the world, slower frequencies are important.

Movement meditations are rarely examined, especially electrophysiologically.




Quadrato Motor Training
We uniquely examine the effects of a specifically stuctured movement meditation, named Quadrato Motor Training (QMT) which combines movement and mindfulness and increases alpha activity. There are many positive implications of increased alpha activity.

# QMT
## Moving from Unbalanced to Integrated Wellness

### Unbalanced Wellness

Mental Disorders

Stress

Decreased Well-being

### Integrated view on Wellness

Physical Well-being

Emotional Well-being

Cognitive Well-being

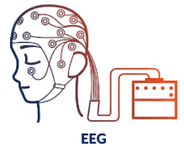
Increased Well-being

### Quadrato Motor Training (QMT) and Results

Behavioural (Positive Feelings, Increased Creativity)

Electro physiological (Increased Alpha)

Molecular (proBDNF, proNGF)





### Interventions jointly addressing all processes

Cognitive Processes

Motor Processes

Affective Processes

# How does QMT work?

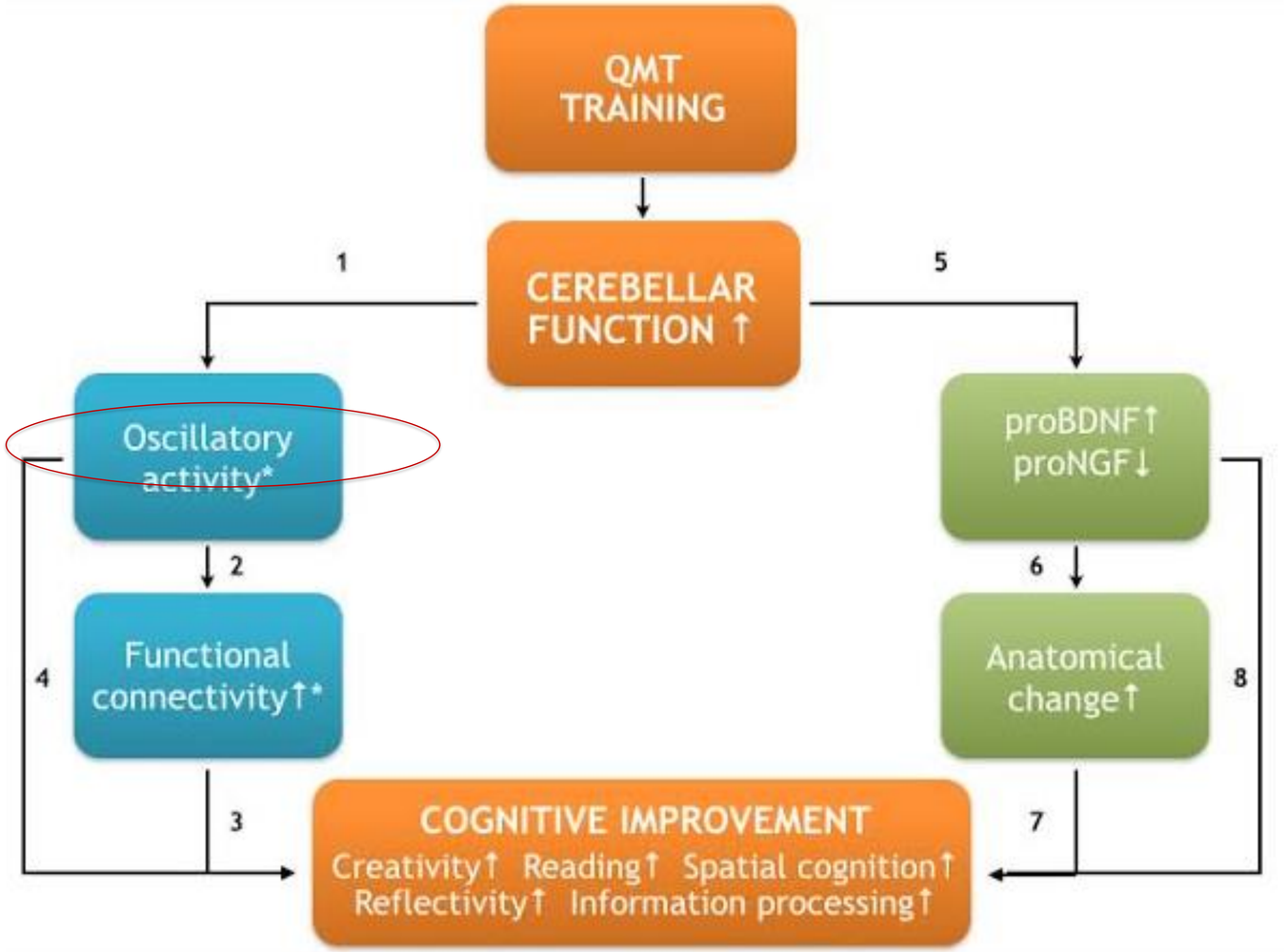
QMT is a structured movement meditation aimed at improving coordination, balance, attention, and emotional well-being through behavioral, electrophysiological (especially within the alpha range), neuroanatomical, and molecular changes.

QMT is a specifically structured movement meditation in which the participant moves within a 50x50 cm square according to verbal instructions

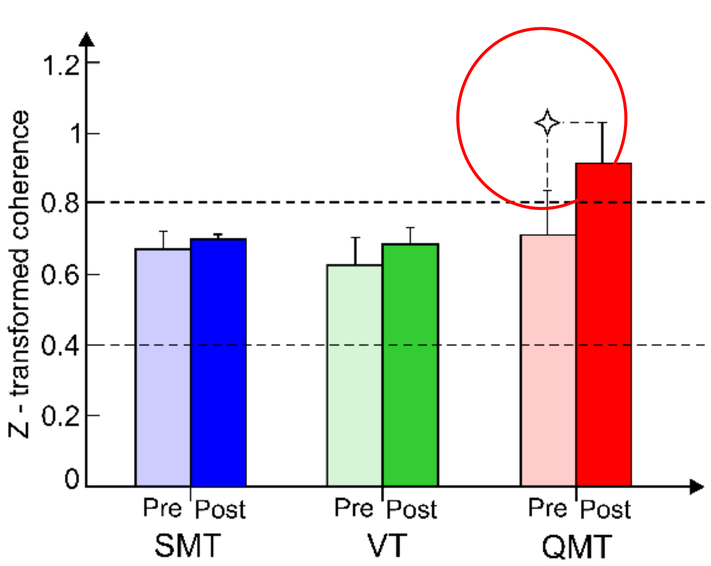

For a review on this topic:

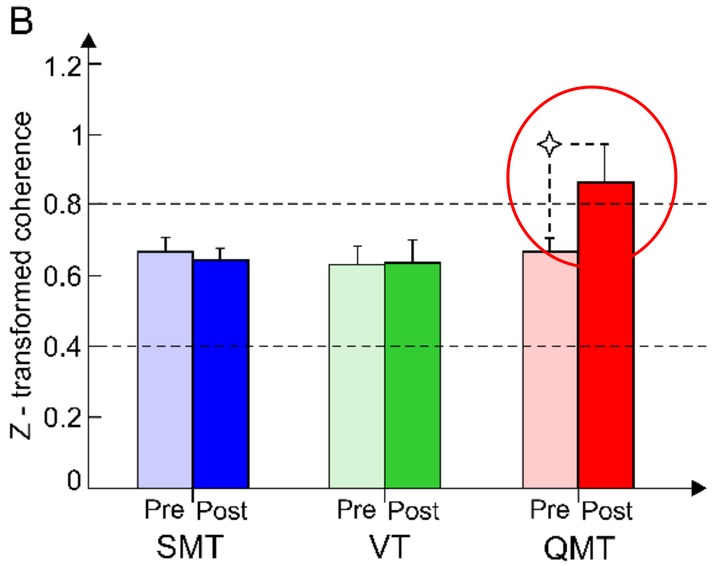
De Fano, A., Leshem, R., & Ben-Soussan, T. D. (2019). Creating an internal environment of cognitive and psycho-emotional well-being through an external movement-based environment: an overview of Quadrato Motor Training. *International Journal of Environmental Research and Public Health*, *16*(12), 2160.

# How does development through movement throughout the lifespan optimize our mental health?



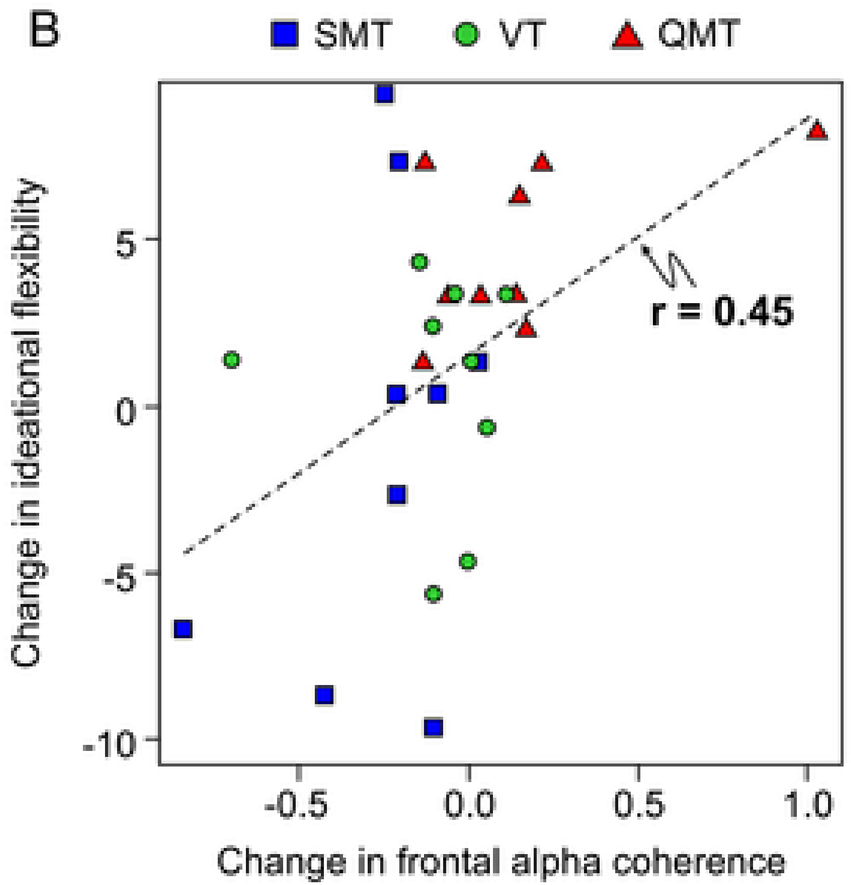

(Ben-Soussan et al., 2015, 2020)




**Intra-hemispheric**
alpha coherence

**Inter-hemispheric**
alpha coherence

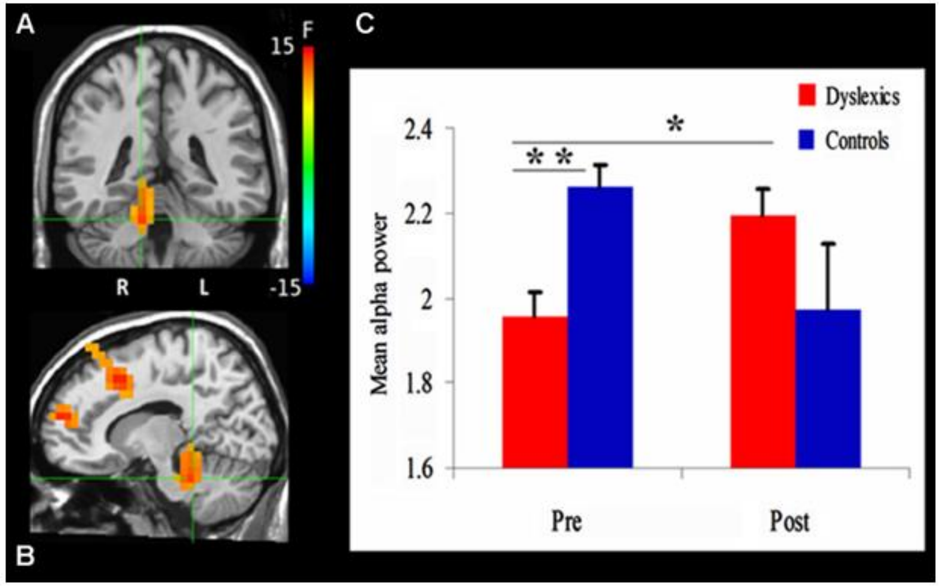



Correlation between change in creativity and frontal alpha coherence

Dotan Ben-Soussan T, Glicksohn J, Goldstein A, Berkovich-Ohana A, Donchin O (2013) Into the Square and out of the Box: The effects of Quadrato Motor Training on Creativity and Alpha Coherence. PLOS ONE 8(1): e55023. doi:10.1371/journal.pone.0055023
http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0055023

# QMT-induced effects
## Changes in alpha

Alpha frequency power before and after QMT between healthy participants and people affected by dyslexia

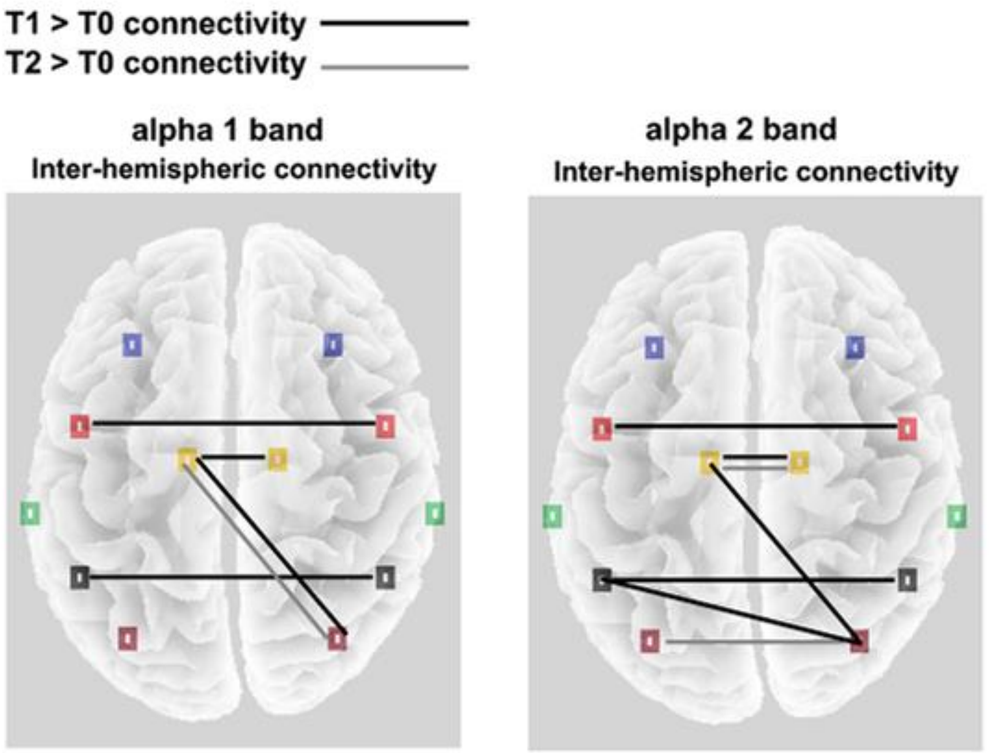



These studies showed that QMT leads to an increase in alpha coherence and cerebellar alpha power

Ben-Soussan, T. D., Avirame, K., Glicksohn, J., Goldstein, A., Harpaz, Y., & Ben-Shachar, M. (2014). Changes in cerebellar activity and inter-hemispheric coherence accompany improved reading performance following Quadrato Motor Training. *Frontiers in systems neuroscience, 8*, 81.

# QMT-induced effects
## Changes in alpha connectivity

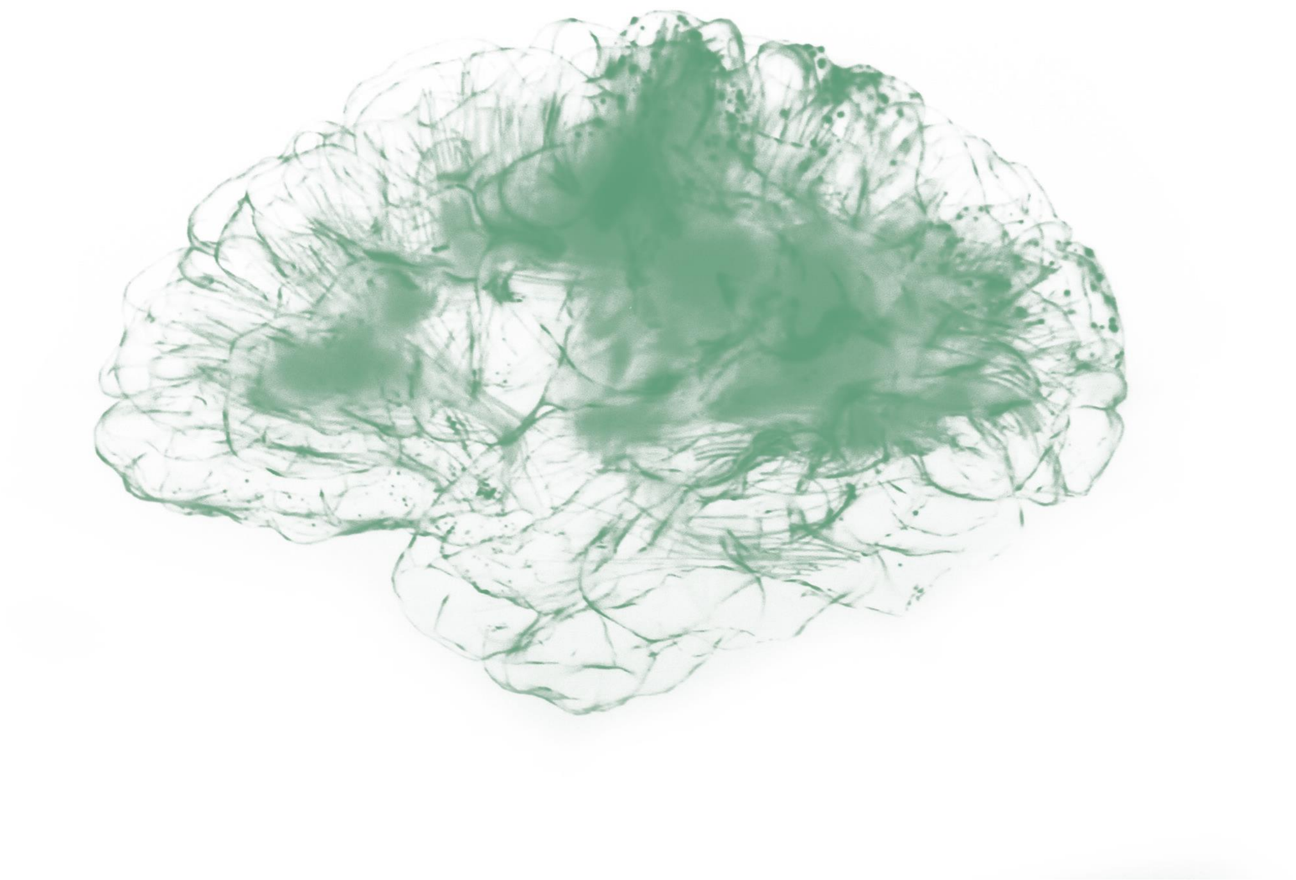
Changes in alpha connectivity before and after QMT




Lasaponara, S., Mauro, F., Carducci, F., Paoletti, P., Tombini, M., Quattrocchi, C. C., ... & Ben-Soussan, T. D. (2017). Increased alpha band functional connectivity following the Quadrato Motor Training: a longitudinal study. Frontiers in human neuroscience, 11, 282.

# QMT-induced effects

## From electrophysiological to emotional and mental well-being



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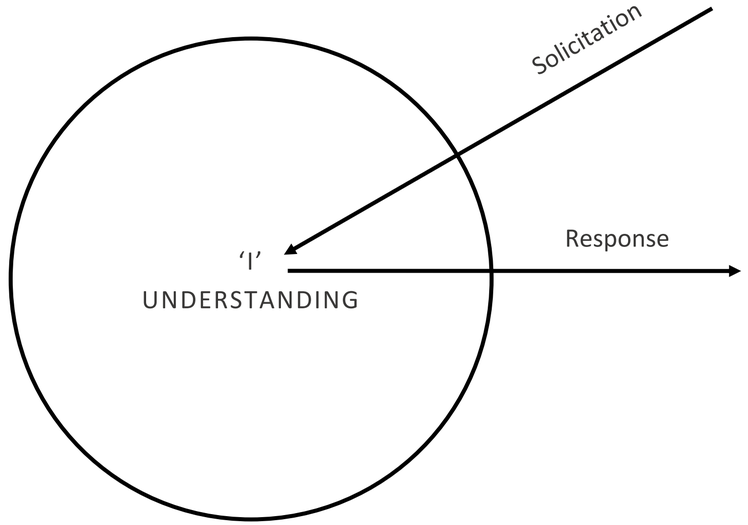
# QMT-induced effects

QMT improves neuroplasticity and neuronal synchronization especially within the alpha range in:

- Healthy Dyslexic Neurodegenerative states
- Different age groups

QMT enhances:

- Creativity, spatial and temporal cognition
- Emotional well-being
- Reading abilities and information processing
- Immune system by decreasing proinflamatory processes
- DNA methylation and genomic stability
- Search for meaning




Moving from
*Stimulus-Response* automatic mode,
to *Stimulus-Understanding-Correct response*
mediated by training-induced unification and
enhanced synchronization
(Paoletti, 2008)

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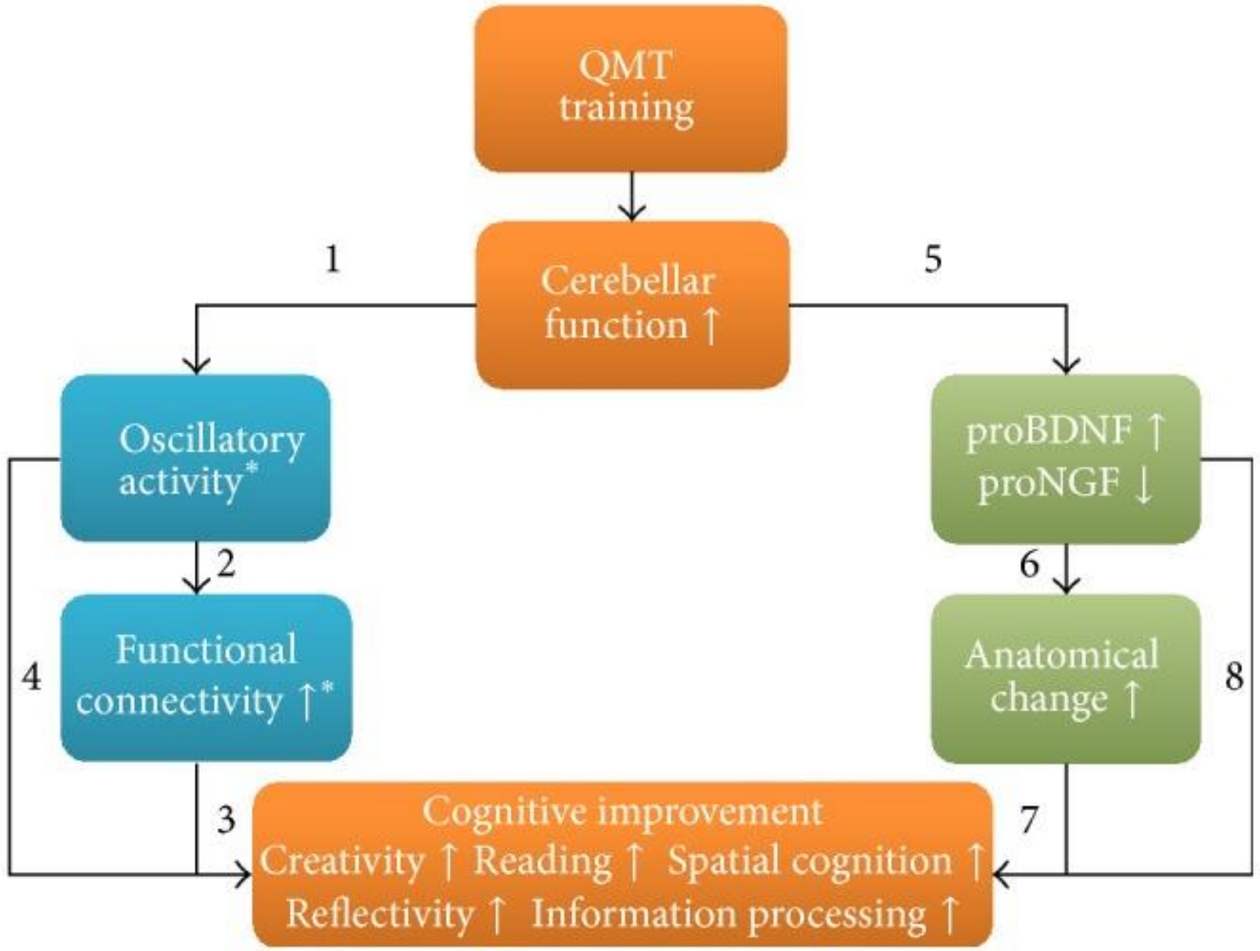
# The importance of mindful movement
# Timing waiting: reflectivity and spatial cognition

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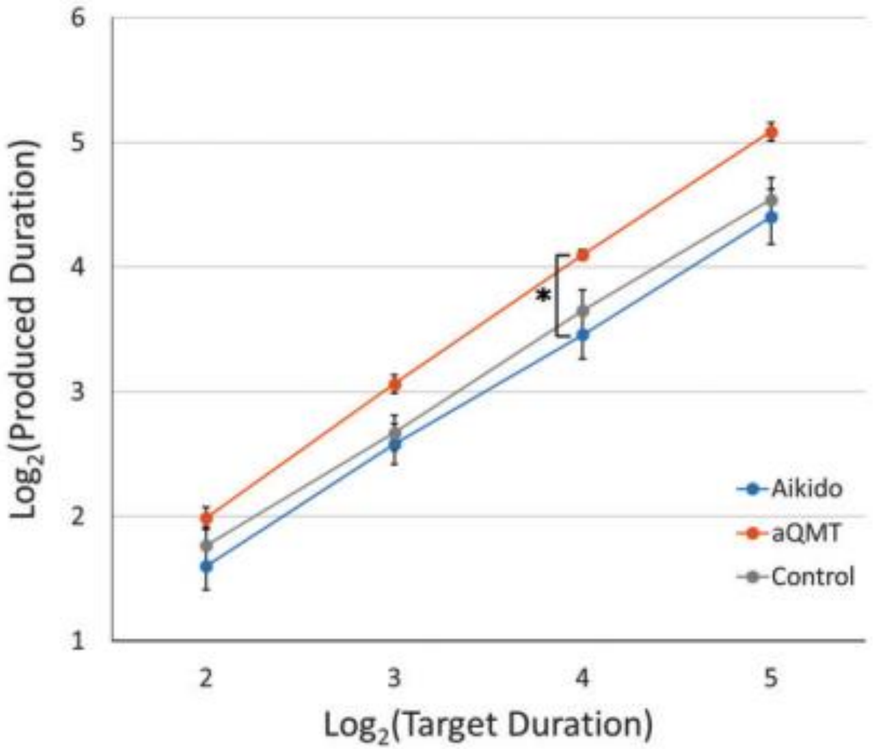
# Temporal production

Produced duration were log-transformed and analysed




Results:

Significant main effects of *Group* (Control, Aikido, QMT) and *TP* (4, 8, 16, 32 sec) were observed

Post-hoc analysis of main effects showed a significant difference between QMT and Aikido

**QMT participants produced longer interval compared to Aikido and Control**

Ben-Soussan, T. D., Glicksohn, J., De Fano, A., Mauro, F., Marson, F., Modica, M., & Pesce, C. (2019). Embodied time: Time production in advanced Quadrato and Aikido practitioners. *PsyCh journal*, *8*(1), 8-16.

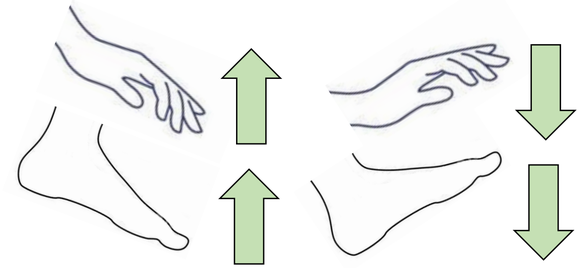
# Coordination

*Homolateral interlimb coordination task*

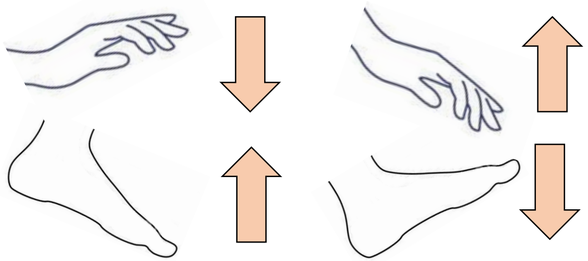
**Hand** and **foot** indipendent sagittal movements were performed for one side of the body at a time for 60 seconds each trial

Two conditions:

In-phase



Anti-phase



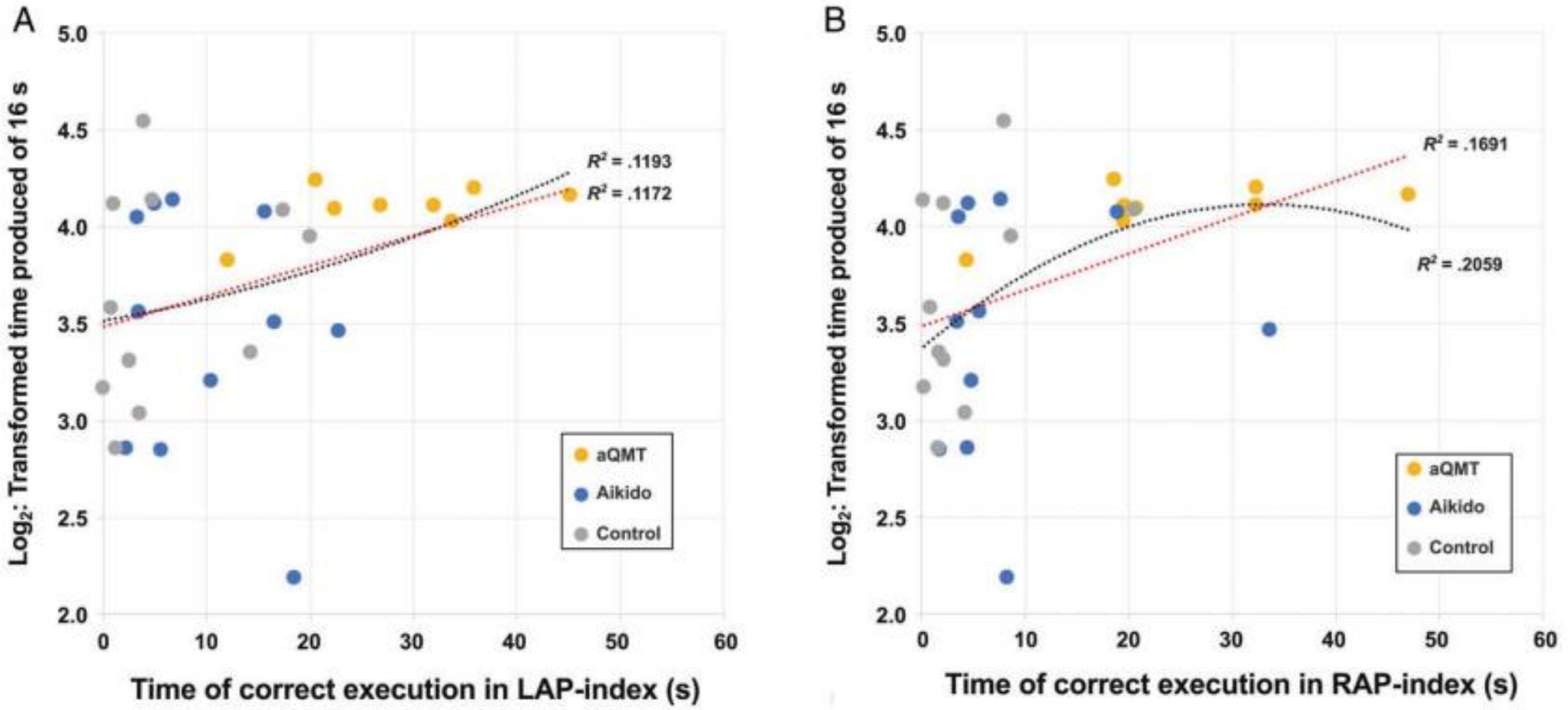
Different paces (80, 120, 180 beats/minute)

**QMT practicioners showed greater coordination** (time of correct execution) in:

- **Left In-phase** movements (vs Aikido and Control)
- **Left Anti-phase** movements (vs Aikido and Control)
- **Right Anti-phase** movements (vs Control)

(Capranica, Tessitore, Olivieri, Minganti, & Pesce, 2004)

# Coordination correlates with TP




**Left** and **Right Anti-phase** movements correlated with TP performance (with target = 16 seconds)

The correlation disappear when we discard the QMT practitioners

# Information Processing

Training of Inhibition

+

Improving in timing and coordination

+

The activation of the sensorimotor self

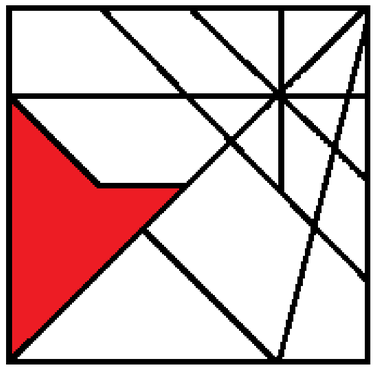
=

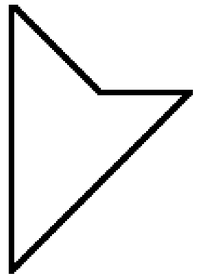
- QMT could change the way we process information

# Hidden Figure Test

Simple geometrical figures has been presented embedded in complex figures

Subject had to find where the simple figure is inside the complex figure as fast as possible





(Glicksohn and Kinberg, 2009)

# Spatial cognition

Total of 24 females

Three experimental groups:

QMT
- Whole-body movements
- According to vocal instructions

Simple Motor Training (SMT)
- Fixed movements similar to QMT
- Always in the same pattern regardless instructions
- Reduced cognitive load

Verbal Training Group (VT)
- Same pace and duration of QMT
- Only verbal responses declaring directions
- Same cognitive load, no movement

QMT practitioners improved in detection of hidden figures

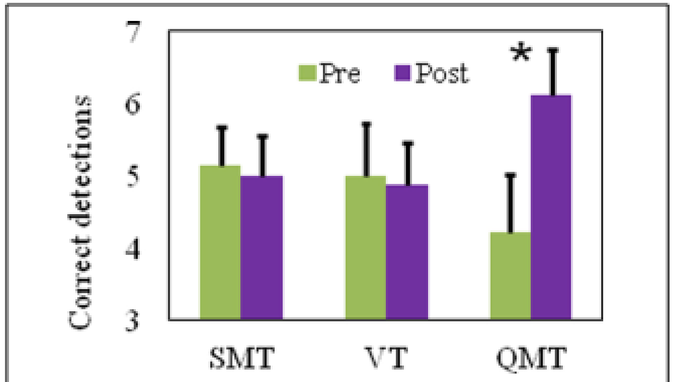



**FIGURE 3 | Number of correct detections in the HFT task as a function of Group and Training (mean ± SEM, *$p < 0.05$).**

(Ben-Soussan et al., 2014)

# Spatial cognition and RT: reflectiviy

Categorization of participants depending on performances:

| | **Low** Hits | **High** Hits |
|---|---|---|
| **Slow** RTs | **Field Dependent** | **Reflective** |
| **Fast** RTs | **Impulsive** | **Field Independent** |

12 participants (out of 37) shifted towards Reflective or Field Independent categorization

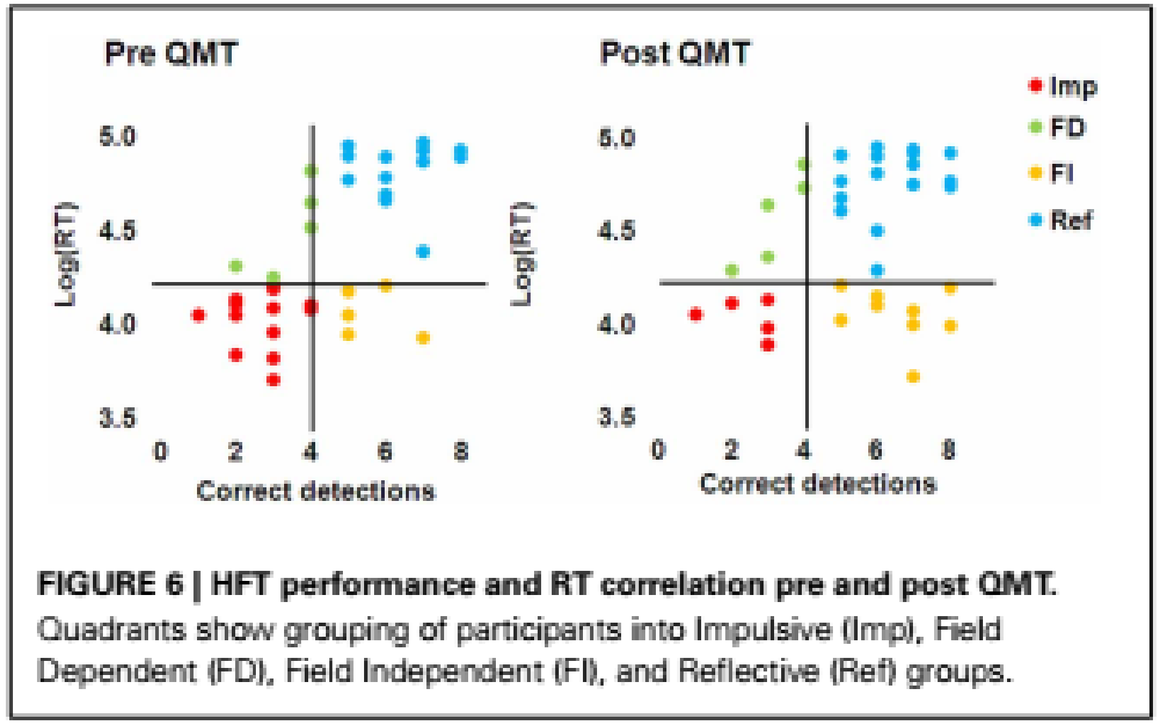



**FIGURE 6 | HFT performance and RT correlation pre and post QMT.** Quadrants show grouping of participants into Impulsive (Imp), Field Dependent (FD), Field Independent (FI), and Reflective (Ref) groups.

(Ben-Soussan et al., 2014)

# Information Processing

Training of Inhibition

+

Improving in timing and coordination

+

The activation of the sensorimotor self

=

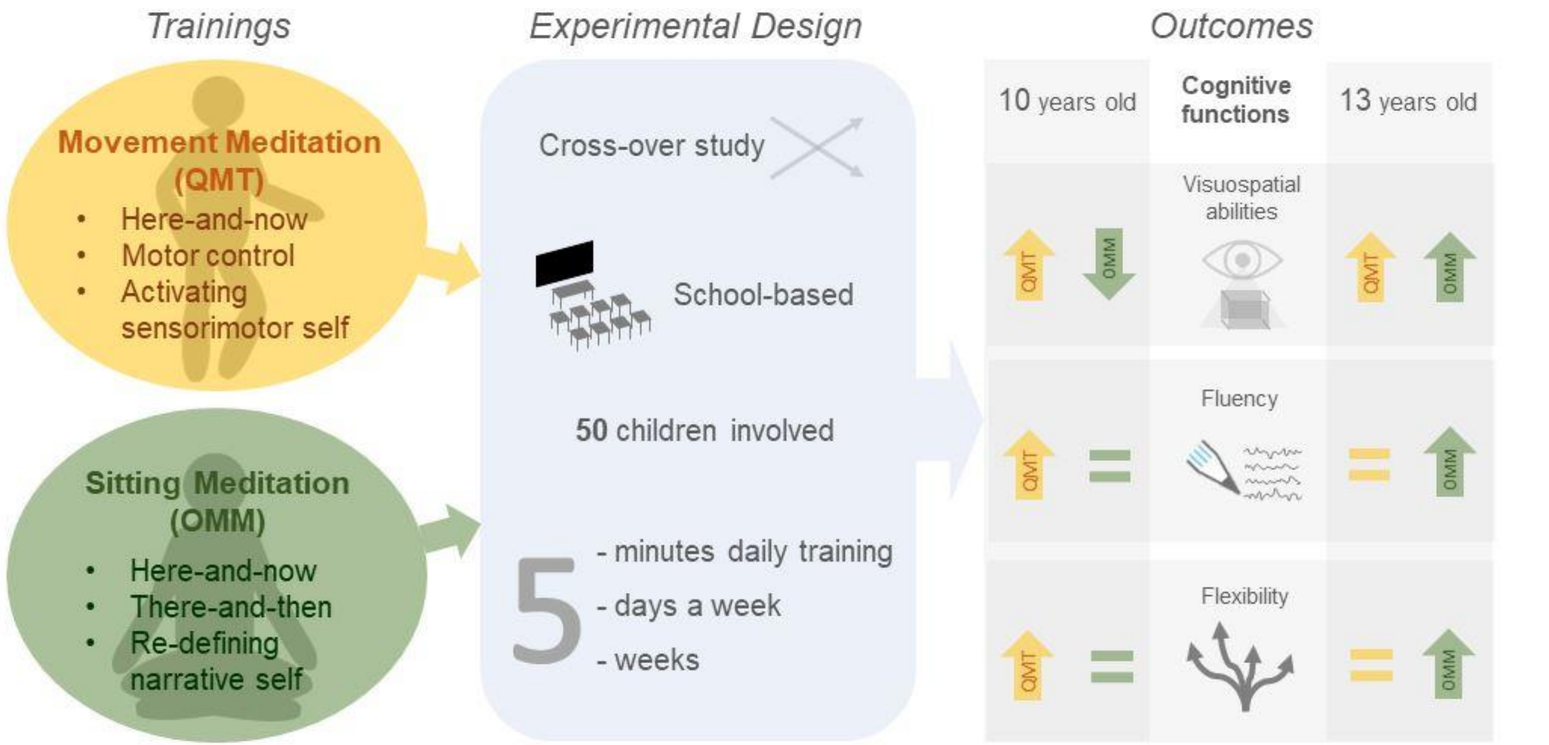
- QMT could change the way we process information

# QMT and Children: group setting in schools

QMT has also been utilized in younger populations and, in particular, in school settings, thanks to the facility with which it can be carried out, requiring limited space and effort.

We observed that **5 weeks of daily training** (during school days) in QMT improved children's cognition.

Specifically, younger children showed greater creativity and better spatial cognition following the QMT.


Cognitive functions improved more following **QMT** for *younger* children and following **OMM** for *older* children

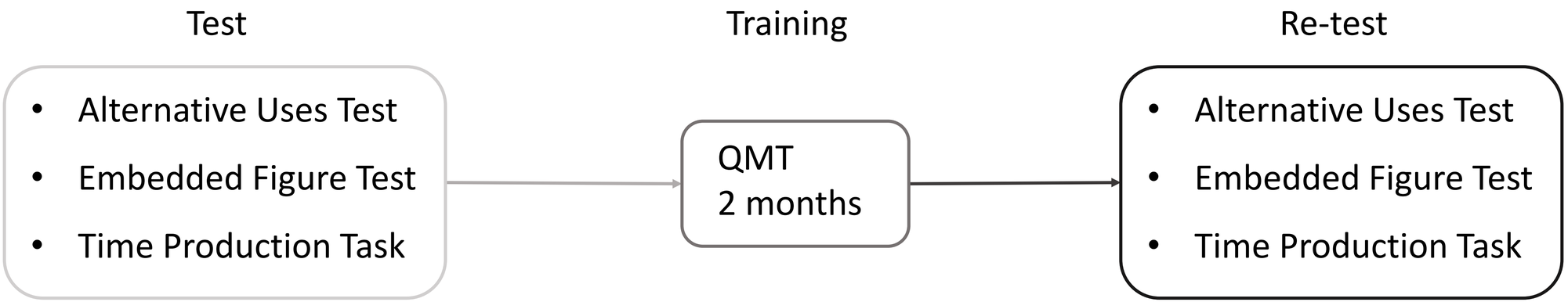
Implementation of these trainings in school resulted feasible


Marson, F., Fano, A. D., Pellegrino, M., Pesce, C., Glicksohn, J., & Ben-Soussan, T. D. (2021). Age-related differential effects of school-based sitting and movement meditation on creativity and spatial cognition: A pilot study. Children, 8(7), 583.

# QMT and Children: AD spectrum

Pilot single case study:

9 years old child
Asperger



# QMT and Children: AD spectrum

Embedded figure test

## *First session*

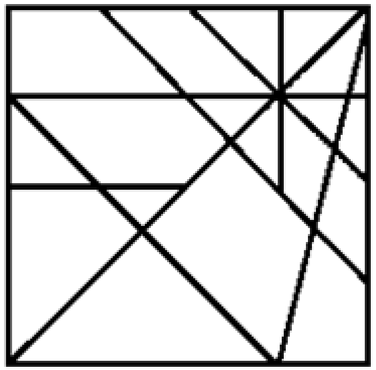
He didn’t find **any** of the figures

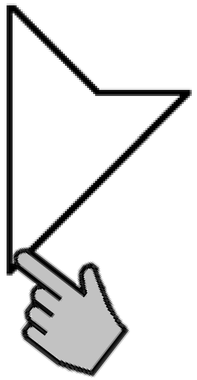
His strategy was to randomly follow lines on the screen

## *Second session*

He found **2** of the figures

First he moved his finger on the target figure and then tried to replicate the pattern on the complex figure.





# QMT and Children: AD spectrum

- Time Production Task (Glicksohn, 1996)

Target duration appeared on the screen (4, 8, 16 or 32 seconds)

Subject had to press a button after a delay congruent with the target timing

Target timing


Time production (waiting)

Button press

# QMT and Children: AD spectrum

# Results

## Time Production Task

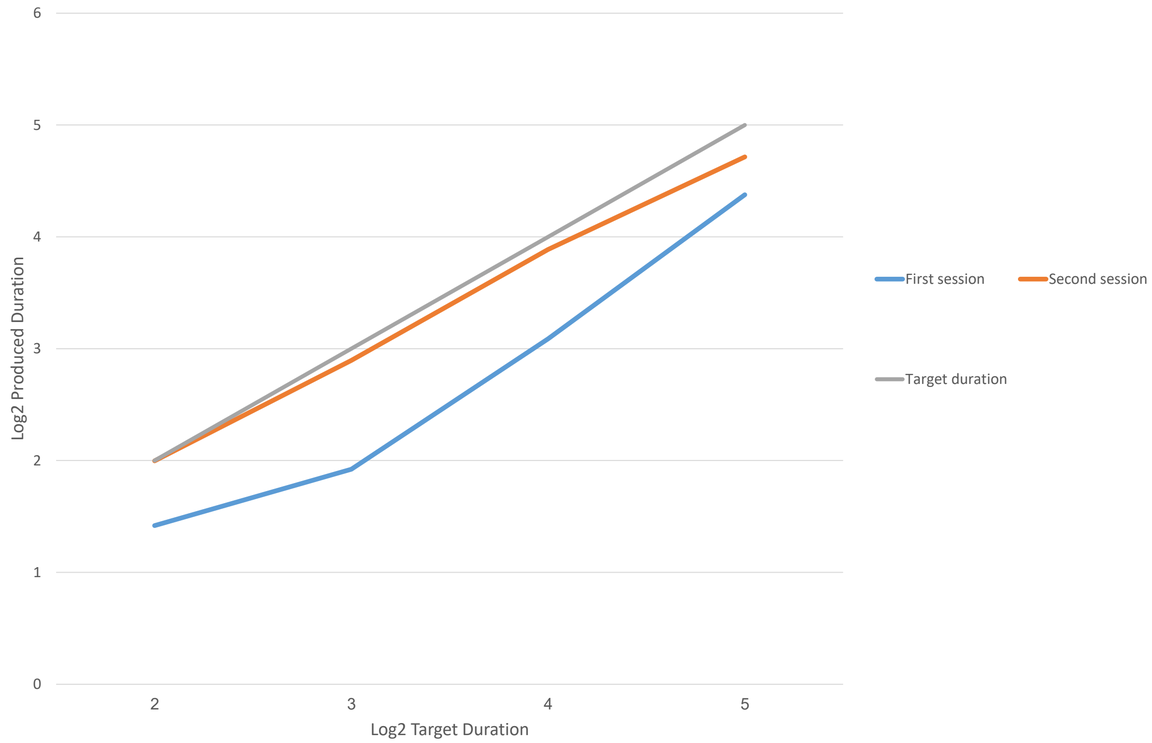
### Linearized results (Log2 transformed)

| Target | First Session | Second Session |
|---|---|---|
| 2 | 1,417920008 | 1,997653714 |
| 3 | 1,922007507 | 2,895108698 |
| 4 | 3,087717412 | 3,887379044 |
| 5 | 4,376290383 | 4,715206994 |

Average distance from Target duration:

First Session: **0.79**

Second Session: **0.12**



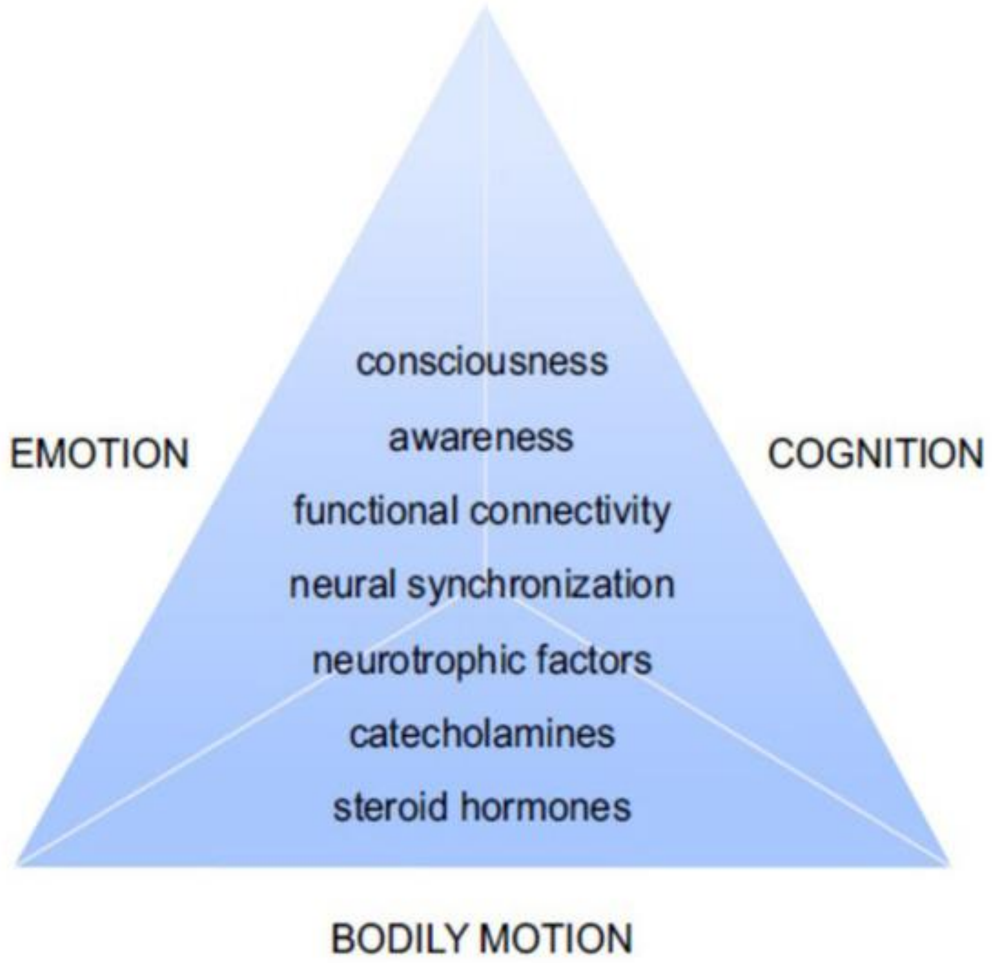
# Mindful movement, QMT and EFs

"Perhaps the biggest surprise is that a relatively understudied approach—**mindfulness practices involving movement (Chinese mind-body practices, taekwondo, t'ai chi, and Quadrato Motor Training)—yielded the strongest results for improving EFs.**

Mindfulness practices involving movement produced the best results for improving EFs across all four different metrics we used for judging strength of EF benefits."

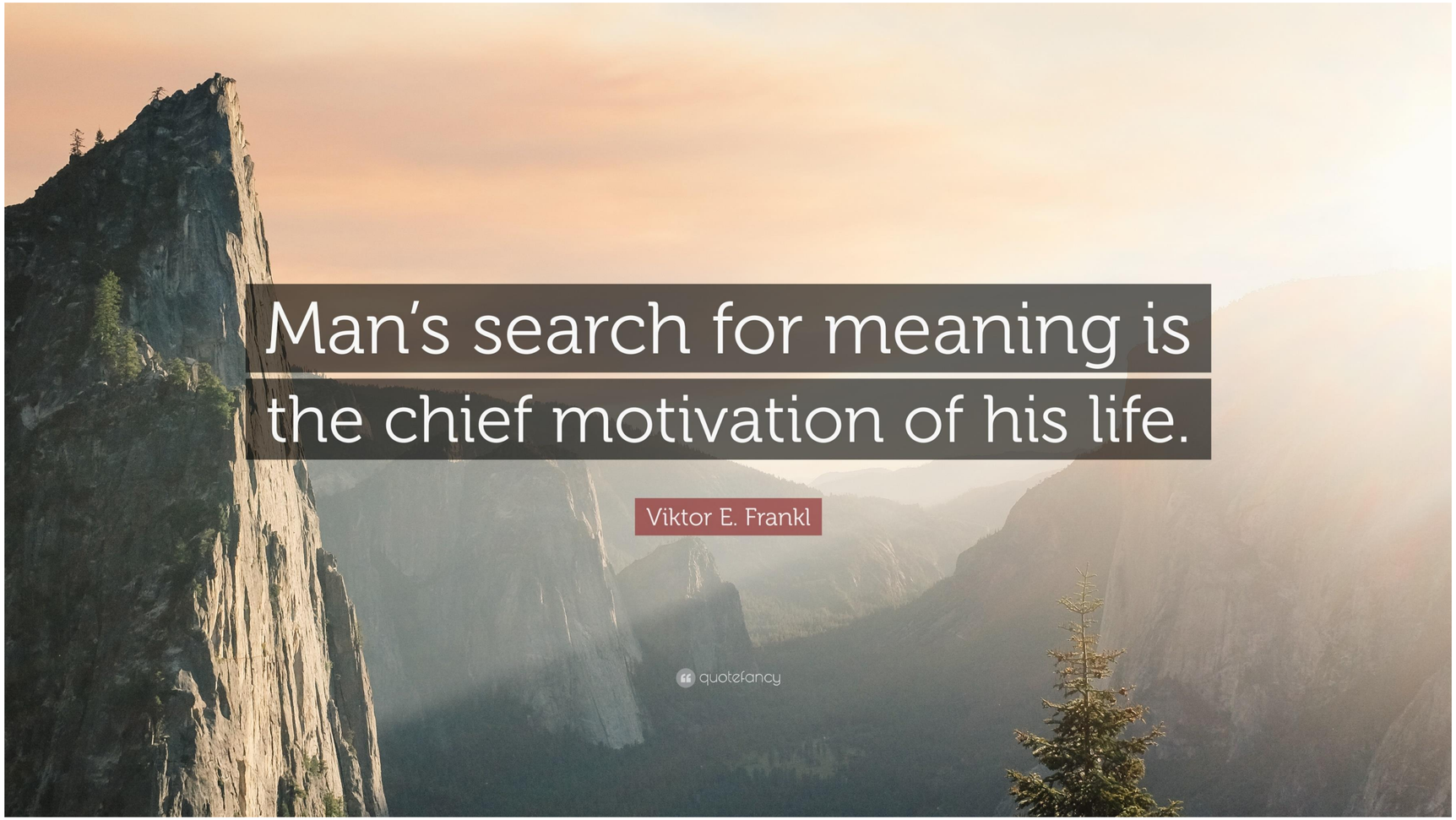
Diamond, A., & Ling, D. S. (2020). Review of the evidence on, and fundamental questions about, efforts to improve executive functions, including working memory. *Cognitive and working memory training: Perspectives from psychology, neuroscience, and human development*, 143-431.

# Healthy and Harmonic Development: a neuro-educational perspective




Paoletti, 2008; Pesce and Ben-Soussan, 2016
Paoletti et al., 2023

# The Meaning of Life

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# The Meaning of Life: presence and search for meaning

_____1. I understand my life's meaning.
**_____2. I am looking for something that makes my life feel meaningful.**
**_____3. I am always looking to find my life's purpose.**
_____4. My life has a clear sense of purpose.
_____5. I have a good sense of what makes my life meaningful.
_____6. I have discovered a satisfying life purpose.
**_____7. I am always searching for something that makes my life feel significant.**
**_____8. I am seeking a purpose or mission for my life.**
_____9. My life has no clear purpose.
**_____10. I am searching for meaning in my life.**

Steger MF, Frazier P, Oishi S, Kaler M. The meaning in life questionnaire: Assessing the presence of and search for meaning in life. J Couns Psychol [Internet]. 2006 Jan;53(1):80–93.

# The search for meaning
# QMT for physical and mental health

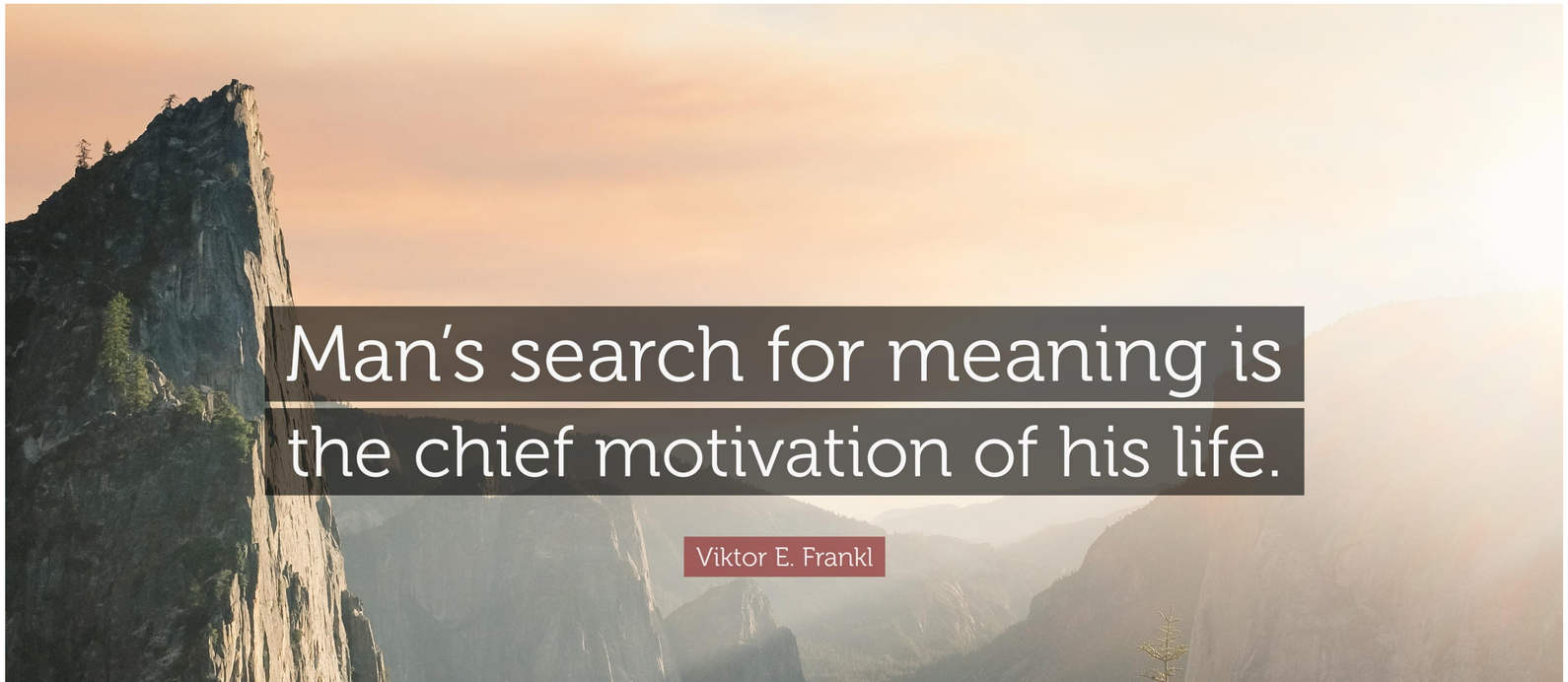
QMT induces methylation alterations in ribosomal DNA and Long Interspersed Nuclear Elements (LINEs) repeats, consistent with increased genome stability. These changes correlated with increases in indices related to Meaning in Life and Positive Relations, thus emphasizing the importance of examining epigenetic and psychological changes related to longevity and vitality.

**The MLQ-S** subscale represents the **attitude toward the active search for meaning** and **reflects motivation to find or increase one's own understanding of life meaning.**

Marson, F., et al. (2023).

Quadrato Motor Training (QMT) is associated with DNA methylation changes at DNA repeats: A pilot study.

Plos one, 18(10), e0293199.

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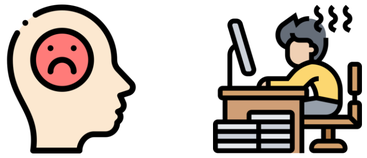
# QMT
## Moving from Unbalanced to Integrated Wellness

### Unbalanced Wellness

Mental Disorders

Stress



Decreased Well-being

### Integrated view on Wellness

Physical Well-being

Emotional Well-being

Cognitive Well-being

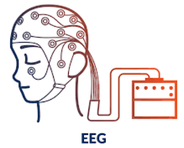
Increased Well-being

### Quadrato Motor Training (QMT) and Results

Behavioural (Positive Feelings, Increased Creativity)

Electro physiological (Increased Alpha)

Molecular (proBDNF, proNGF)





### Interventions jointly addressing all processes

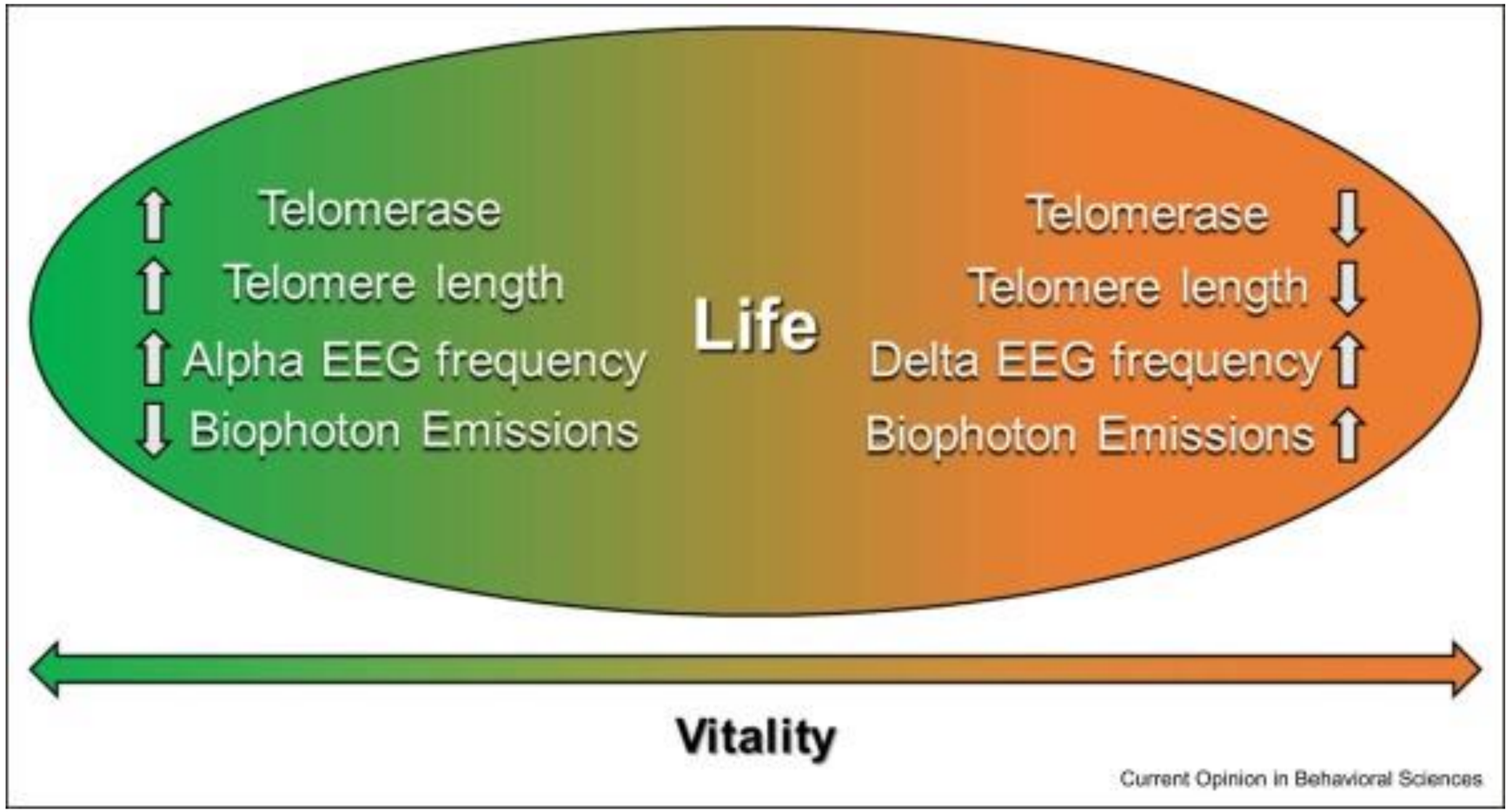
Cognitive Processes

Motor Processes

Affective Processes

Paoletti, P., Pellegrino, M., & Ben-Soussan, T. D. (2023). A Three-Fold Integrated Perspective on Healthy Development: An Opinion Paper. *Brain Sciences*, *13*(6), 857.

# Resolving the Health crisis within:
# The importance of Being Embodied




Ben-Soussan, T. D., & Paoletti, P. (2024). Life in light of the Sphere Model of Consciousness: a bio-electrophysiological perspective on (well-) being and the embodied self. *Current Opinion in Behavioral Sciences*, *55*, 101344.

# QMT-induced effects

## QMT was found to increase slow wave oscillations as a means of fine tuning inside and out

Towards the center of the Sphere Model of Consciousness

| Study | Self Involved | Technique | General Results | Neural Correlates |
|---|---|---|---|---|
| Berkovich-Ohana et al., 2017 | NS | Mindfulness Meditation | Enhanced creativity by long-term mindfulness training | Negatively correlation of creativity results with gamma inter-hemispheric functional connectivity |
| Lasaponara et al., 2016 | NS/MS | QMT | EEG changes related to activation in higher order processing and mental effort<br>Sharpened specialization during eyes closed and eyes open brain states, refining their specific electrophysiological characteristics | Enhancement of the shift from posterior to frontal Beta/Gamma from eyes closed to eyes open resting state after QMT<br>Peculiar EEG bands characterizing eyes closed (alpha synchronization) and eyes open (Beta activity) resting state were positively modulated and increased after QMT. |
| Ben-Soussan et al., 2011 | MS | QMT | Changes in time production correlated with frontal theta power and coherence changes | Bilateral temporal theta coherence during the time production task increased following QMT |
| Ben Soussan et al., 2013 | MS | QMT | Change in ideational flexibility was correlated with change in alpha coherence | Increased inter- and intra-hemispheric alpha coherence |
| Ben-Soussan et al., 2014a | MS | QMT | Improved performance on a speeded reading task (both Control and Dyslexic) | Increased cerebellar oscillatory alpha power (Dyslexic)<br>Increased inter-hemispheric alpha coherence (Dyslexic more than Controls) |
| Ben-Soussan et al., 2014b | MS | QMT | Decreased mind-wandering and narrative focused thought<br>Increased reflectivity in both genders | Decreased gamma coherence in males compared to females<br>Increased alpha and theta coherence in females while the opposite was found for males |
| Lasaponara et al., 2017 | MS | QMT | Significant changes in functional connectivity in the alpha band following QMT | Limbic and fronto-temporal alpha connectivity increased during resting state following QMT |
| De Fano et al., 2019 | MS | QMT | Increased frontal theta in last two blocks of QMT compared to the first one | Increased prefrontal and frontocentral theta |
| Glicksohn et al., 2019 | MS/OTS | OVO-WBDP | Subjective experience and gender related differences in alpha profiles of participants | R>L asymmetry for males and L>R asymmetry for females<br>Positive (frontal L<R alpha) or Negative (frontal L>R alpha) affect<br>More verbal (L>R alpha) or a more imagistic (R>L alpha) thinking<br>More trancelike (frontal>parietal alpha) or more reflective (frontal<parietal alpha) state of consciousness |
| Ben-Soussan et al. 2019 | OTS | OVO-WBDP | Achievement of a state of absorption | Increased delta and beta1 in left inferior frontal cortex and in the insula |

*Main hypotheses are colored in blue scale (with increasingly dark blue color as the findings relate toward the center of the sphere).*

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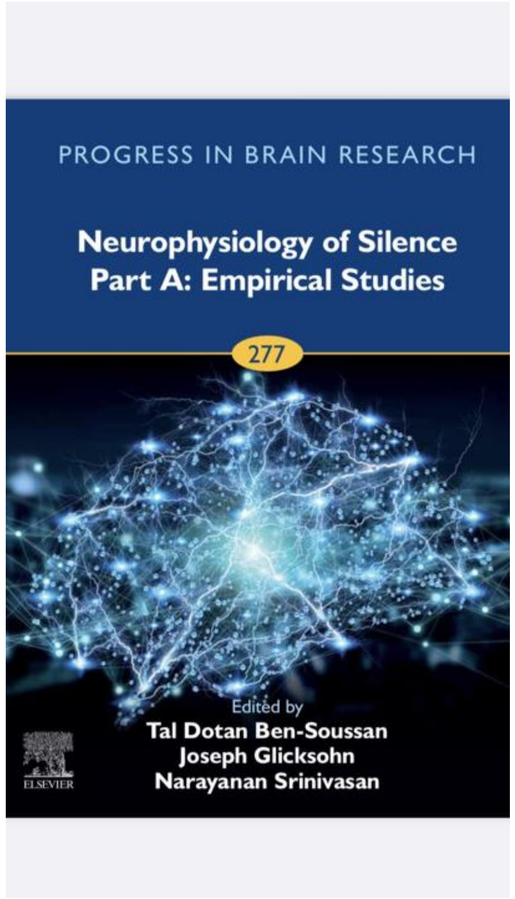
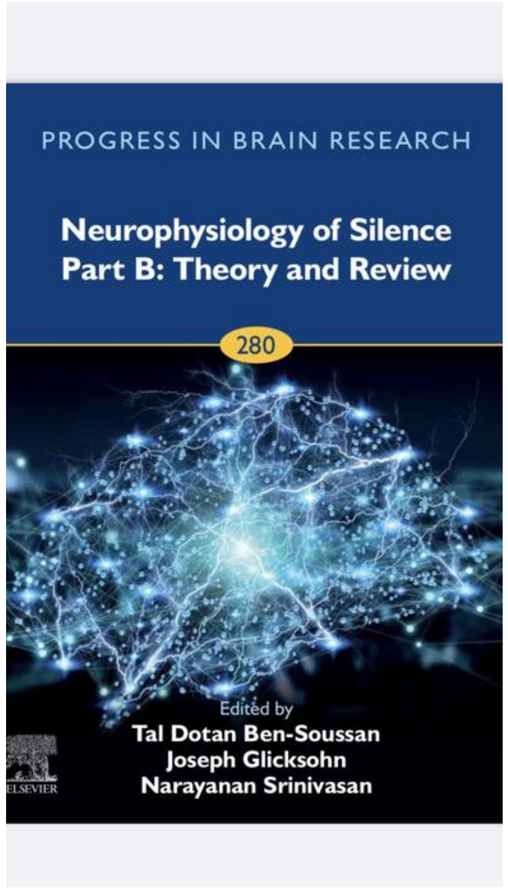
# Psycho-Neuro-Education of Silence: positive solitude versus loneliness





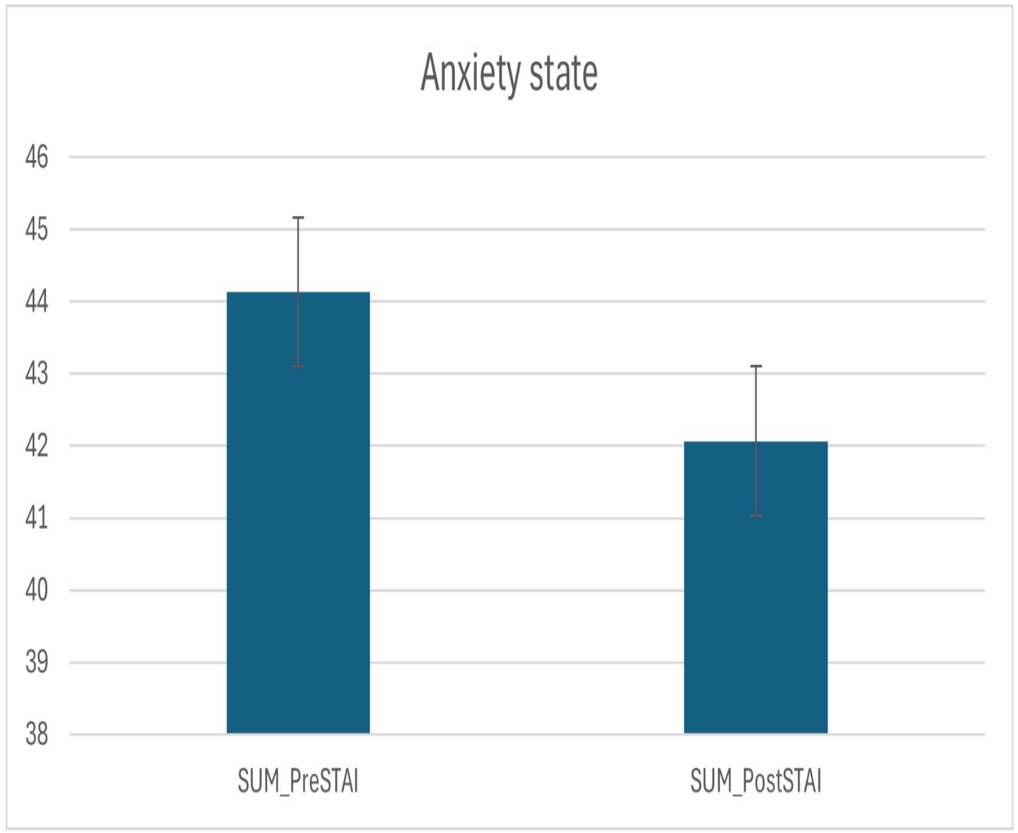
# Silence, positive solitude and suggestions

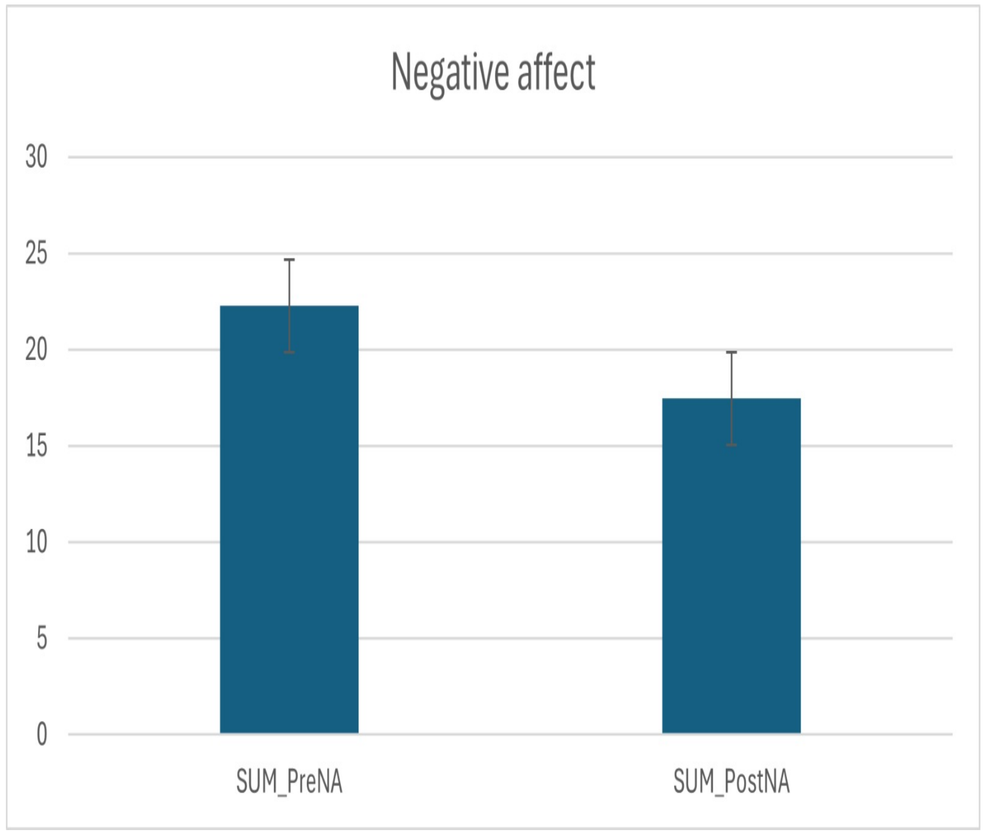
- The importance of mindful movement, solitude and silence for reducing stress
- Beneficial programs work because they not only train and challenge EF skills, but also:
  - self-control, selective attention, and WM into most school activities
  - bring joy, pride, and self-confidence
  - a deep commitment, and provide a sense of social belonging

  (e.g., team membership)

Diamond, A., & Ling, D. S. (2020). Review of the evidence on, and fundamental questions about, efforts to improve executive functions, including working memory. Cognitive and working memory training: Perspectives from psychology, neuroscience, and human development, 143-431.
Pesce, C. (2012). Shifting the focus from quantitative to qualitative exercise characteristics in exercise and cognition research. Journal of Sport & Exercise Psychology, 34(6), 766–786.

# Future and current directions:
# QMT following trauma: decreased state anxiety and negative affect



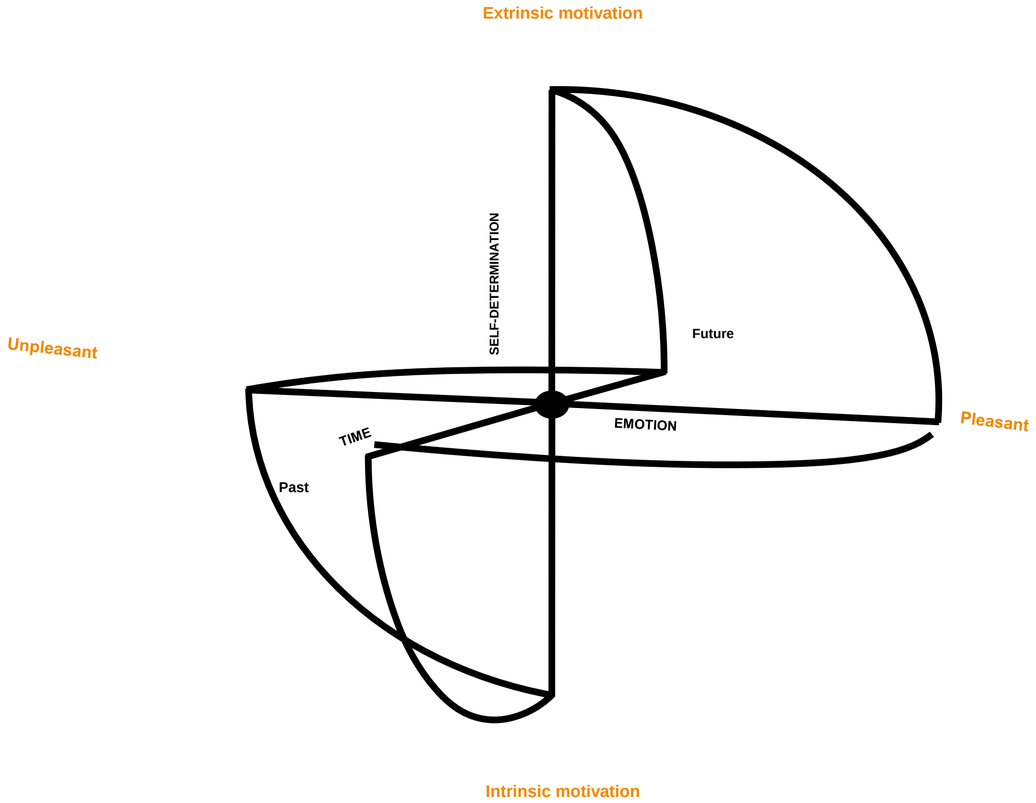




STAI

PANAS

The State-Trait Anxiety Inventory (STAI) is a commonly used measure of trait and state anxiety (Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983).

# Mental Health: SMC and being embodied

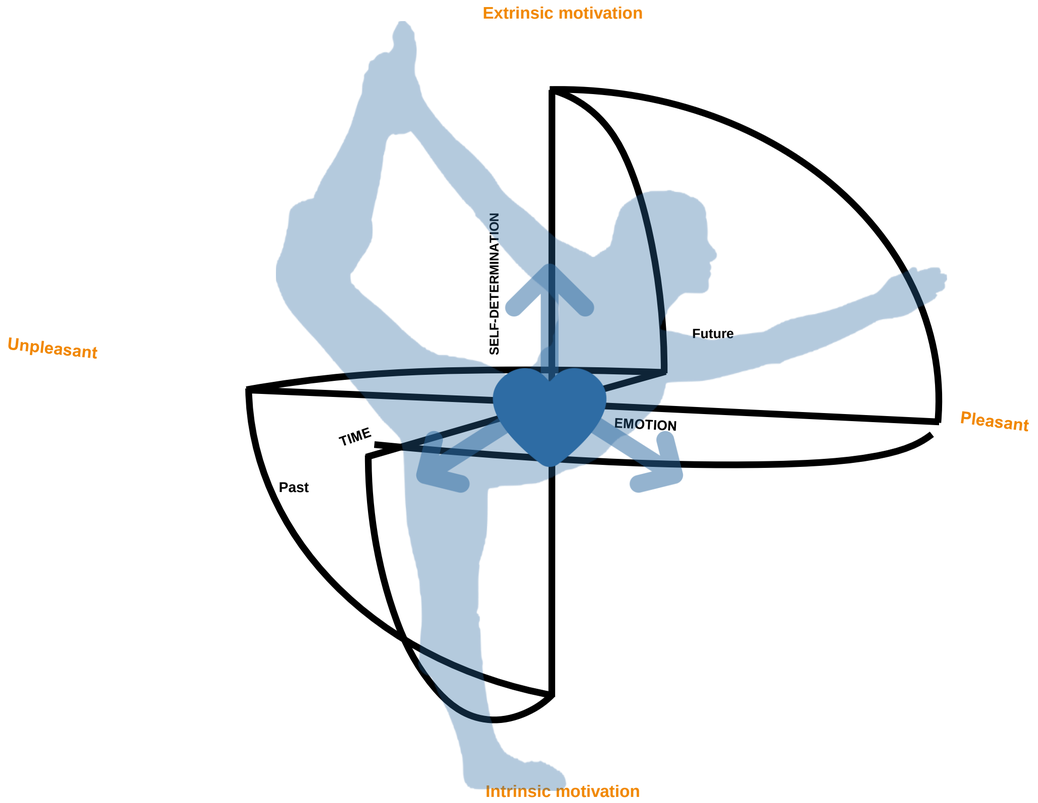



The Sphere Model of Consciousness (SMC)

Paoletti, 2002a,b, 2008; Paoletti and Selvaggio, 2011;

Paoletti and Ben Soussan, 2019 , 2020

# Future directions:
# Sphere Model of Consciousness, dance and directionality




The Sphere Model of Consciousness (SMC)

Paoletti, 2002a,b, 2008; Paoletti and Selvaggio, 2011;

Paoletti and Ben Soussan, 2019 , 2020

# Related Publications, 2023


- Marson, F., Zampieri, M., Verdone, L., Bacalini, M. G., Ravaioli, F., Morandi, L., ... & Reale, A. (2023). Quadrato Motor Training (QMT) is associated with DNA methylation changes at DNA repeats: A pilot study. Plos one, 18(10), e0293199.
- Paoletti, P., Pellegrino, M., & Ben-Soussan, T. D. (2023). A Three-Fold Integrated Perspective on Healthy Development: An Opinion Paper. Brain Sciences, 13(6), 857.
- Pellegrino, M., Glicksohn, J., Marson, F., Ferraiuolo, F., & Ben-Soussan, T. D. (2023). The cloud of unknowing: Cognitive dedifferentiation in whole-body perceptual deprivation. Progress in Brain Research, 277, 109-140.
- Pellegrino, M., Ben-Soussan, T. D., & Paoletti, P. (2023). A Scoping Review on Movement, Neurobiology and Functional Deficits in Dyslexia: Suggestions for a Three-Fold Integrated Perspective. International Journal of Environmental Research and Public Health, 20(4), 3315.
- Verdone, L., Marson, F., Caserta, M., Zampieri, M., Reale, A., Bacalini, M. G., ... & Venditti, S. (2023). Quadrato motor training (QMT) influences IL-1β expression and creativity: Implications for inflammatory state reduction and cognitive enhancement. Progress in Brain Research, 277, 63-83.
- Verdone, L., Caserta, M., Ben-Soussan, T. D., & Venditti, S. (2023). On the road to resilience: Epigenetic effects of meditation. Hormones and Epigenetics, 122, 339.

- https://rined.institute/en/publications-qmt/

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20. Pellegrino, M., Ben-Soussan, T. D., & Paoletti, P. (2023). A Scoping Review on Movement, Neurobiology and Functional Deficits in Dyslexia: Suggestions for a Three-Fold Integrated Perspective. International Journal of Environmental Research and Public Health, 20(4), 3315.
21. The Quadrato Motor Training model: implications to the treatment of Alzheimer and Parkinson's disease,''. In Frontiers Human Neuroscience Conference Abstract,(Greece: SAN2016 Meeting). doi: 10.3389/conf. fnhum (Vol. 30)
22. Verdone, L., Marson, F., Caserta, M., Zampieri, M., Reale, A., Bacalini, M. G., ... & Venditti, S. (2023). Quadrato motor training (QMT) influences IL-1β expression and creativity: Implications for inflammatory state reduction and cognitive enhancement. Progress in Brain Research, 277, 63-83.
23. Marson, F., Zampieri, M., Verdone, L., Bacalini, M. G., Ravaioli, F., Morandi, L., ... & Reale, A. (2023). Quadrato Motor Training (QMT) is associated with DNA methylation changes at DNA repeats: A pilot study. Plos one, 18(10), e0293199.

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Patrizio Paoletti Foundation's activities and planning have always been based on neuro-psycho-pedagogical research. A science without boundaries that starts from the premise that: health does not mean the absence of disease.

Thanks to the pioneering vision and multidisciplinary approach of the founder Patrizio Paoletti, today we can guarantee an education of excellence for cognitive and emotional wellbeing and spiritual growth in children and adults.

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## Innovation in Schools

Scholastic programmes designed to promote the development of life skills from early childhood, going beyond the traditional acquisition of knowledge

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Life-changing research

# Research Institute for Neuroscience Education and Didactics (RINED) FPP

## Why?

Impact and assist healthy and harmonious development and wellbeing at all ages.

**By understanding the underlying mechanisms, we can help psycho-physiological processes of well-being, coping with the polycrisis and especially the health crisis, by increasing personal and social resilience. We can always improve inside and out.**

## What?

Rigorous Scientific study (PH.A.S.E)
Through a process starting from the Philosophical vision of what humans can achieve, to Art and the innovative tools to achieve it, to Science for examining these tools and the Economy of Self to guarantee sustainability

Academic collaborations:
- peer reviewed articles
- scientific conferences
- books and courses

Sharing knowledge for the general public
- International and European projects
- Educational Kits
- books and courses

## Who?

Target populations:

- Adults
  Neuroplasticity, creativity, spirituality, resilience and wellbeing.
- Children

reading, coordination, academic, emotional, physical, cognitive, social and spiritual well-being

- Neurodegenerative patients
  Alzheimer's and Parkinson's disease

## How?

Innovative Techniques
- Quadrato Motor Training (QMT)
- OVO-WBPD whole body perceptual deprivation tank
- Place of Pre-Existence Technique
- One Minute Meditation (OMM)
- Physical activity and active breaks in schools

Methods
- Electrophysiological (EEG, MEG)
- Behavioral
  - coordination, balance
  - Emotional regulation and affect
  - Creativity, spatial and temporal cognition
- Molecular (NGF, DNAm, Cytokines)
- Structural and Neuroanatomical (MRI)

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## 120.000

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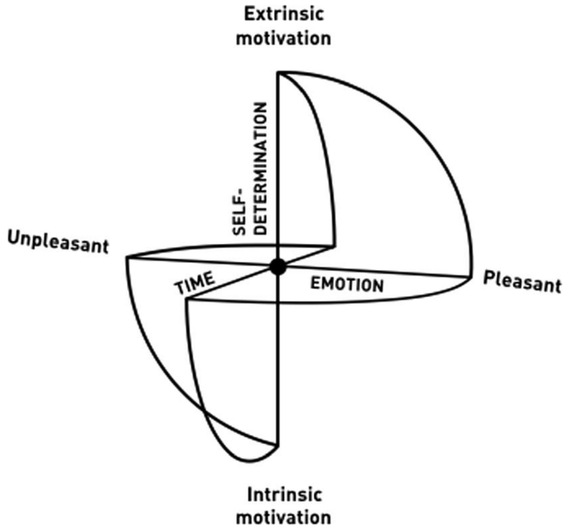
trained

## 285.000

Children, families and
teachers reached by our
educational projects

## Sphere Model of Consciousness (SMC)

considered one of the most advanced and elegant models of consciousness




## 5 innovative techniques

examined in over 14 labs, schools and hospitals throughout the world

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# Thank you!

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