The NeuroNet Program

Introduction to NeuroNet
Creating Independent Learners Through Movement Multi-tasking

neuronetlearning.com

Improving Quality of Life through Independent Learning

100 out of 180 children in first grade are already receiving special services

80 out of 180 children in first grade are Independent Learners

Who is an Independent Learner?
- attention to perceptual detail
- memory & motor memory
- productive trial-and-error problem solving
NeuroNet Motto: Get your brain to practice what you want your brain to learn

NeuroNet GOAL: Create Independent Learners

Movement Multi-tasking

What has changed? The speed and accuracy network linking perception and movement in time.
Skill + Automaticity = Speed-and-accuracy Network

Speed-and-accuracy Network = Independent Learner

What is automaticity?


Poldrack: “The ability to perform skilled tasks without the need for executive control is referred to as ‘automaticity’.”

NeuroNet automaticity = making the speed-and-accuracy network
How do we measure automaticity?

When by the clock = where in the brain

Fig. 6. PET images (41% atlas slice) of a subject in naive and practice conditions, showing decreases in GMR [glucose metabolism rate].

Haier, 1988
The baby’s first job, apart from survival, is AUTOMATE Head Control!

Rowe: Children who have mastered perceptual-motor skills may NOT have automated those skills.

Rowe: We can use movement multi-tasking to create and measure automaticity for the basic movement patterns of balance, vision and hearing.
How to learn:

Attention
Memory
Problem-solving

From neural synchrony to neural networks: Neurons that fire together, wire together.

Neurons that fire together, wire together.

TIMING creates neural networks.

Llinás, 2001

Binocular Vision Is a Neural Network

Man/woman
Old/young
Famous person

Binaural Hearing Is a Neural Network
Reach
And touch
By Hearing

Why is neural synchrony so important?

It’s the neural basis of . . .

What are the two advantages of more neural synchrony?


Advantages of more neural synchrony:

The two advantages of more neural synchrony are:
Speed and accuracy
How to learn:
- Attention
- **Memory**
- Problem-solving

What is synaptic strengthening?

Why is synaptic strengthening so important?

It’s the neural basis of . . .

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Neural pre-requisite for synaptic strengthening

Post-synaptic depolarization
What are the 2 sources of post-synaptic depolarization?

Intensity - or - anticipation

Anticipation makes us ready to learn.

How to learn:
Attention
Memory
Problem-solving

What is temporal binding?
Creation of a distributed neural network linking perception and movement

Close your eyes and listen.
Open your eyes and watch.

The NeuroNet exercises use temporal binding to link vision, hearing and balance through movement.

This perceptual-motor network enables us to automate movement, and to use movement as a tool for learning.

The “sometimes” kid
The Independent Learner

NeuroNet Motto: Get your brain to practice what you want your brain to learn!

NeuroNet Goal: Only an Independent Learner becomes an Independent adult

NeuroNet Skill: make the speed-and-accuracy network!

NeuroNet Guide: Nothing succeeds like PREDICTING success!