

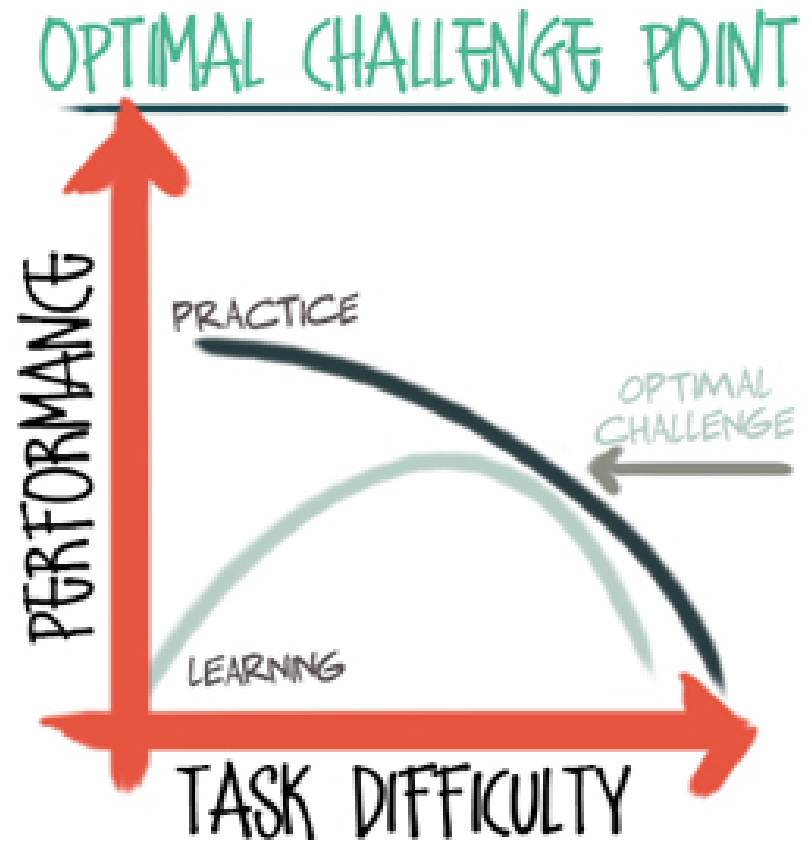
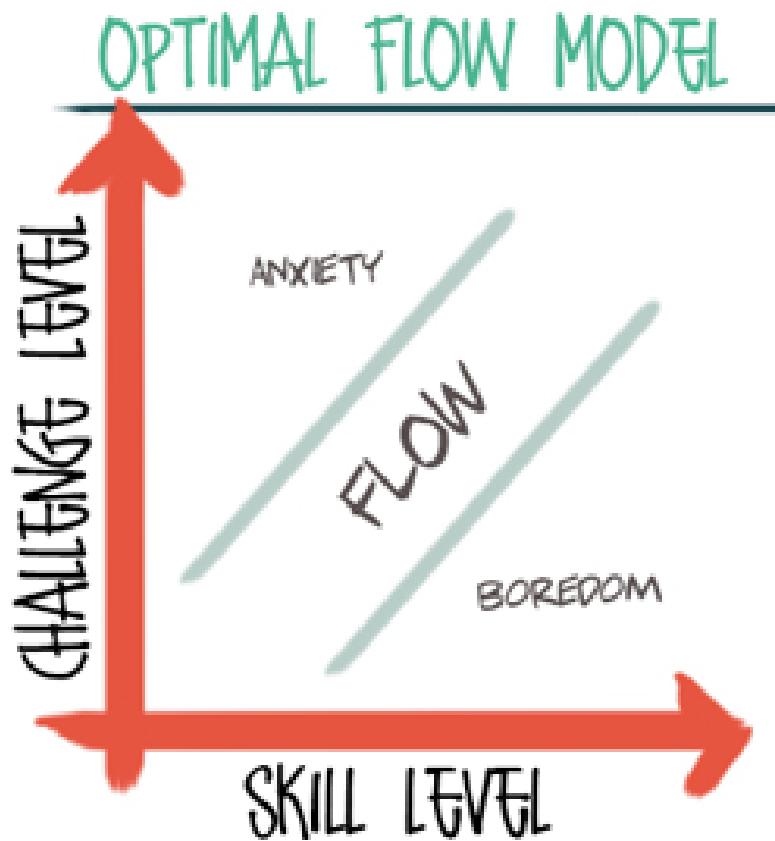
Practical Intervention Strategies and Dosage in Brain Fitness

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Maximizing Engagement in Brain Fitness Programming

- Practical interventions are only better if:
 - 1) The learner is considered by level of difficulty
 - 2) The learner is considered by interest
 - 3) They are convenient
 - 4) They offer a satisfactory level of variety
 - 5) They can be progressed

Flow: The Challenge Point



Flow

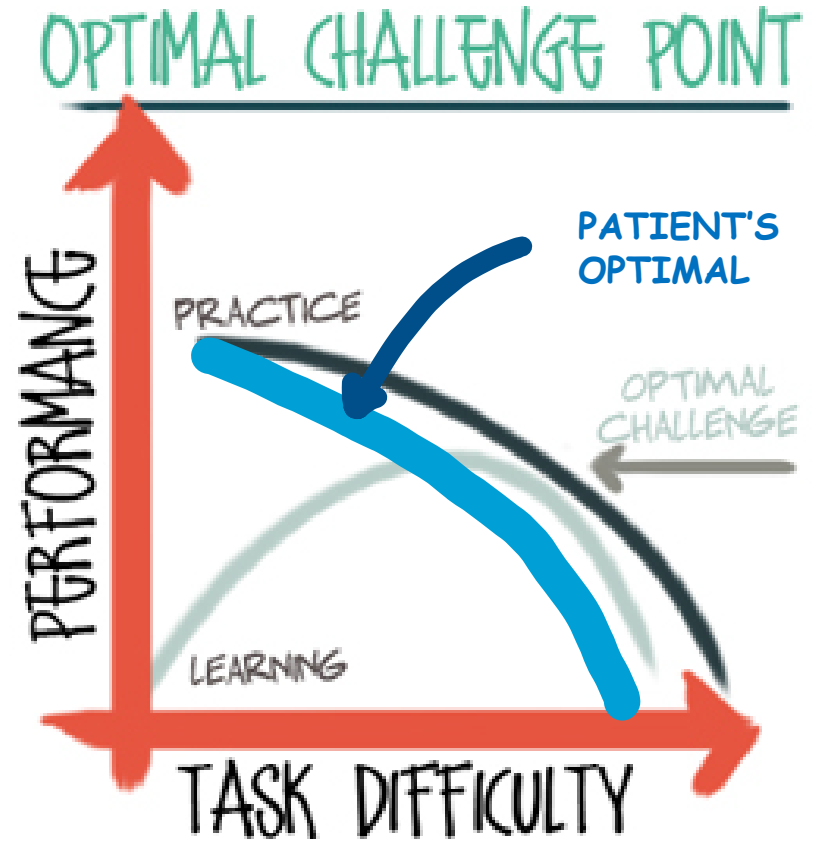
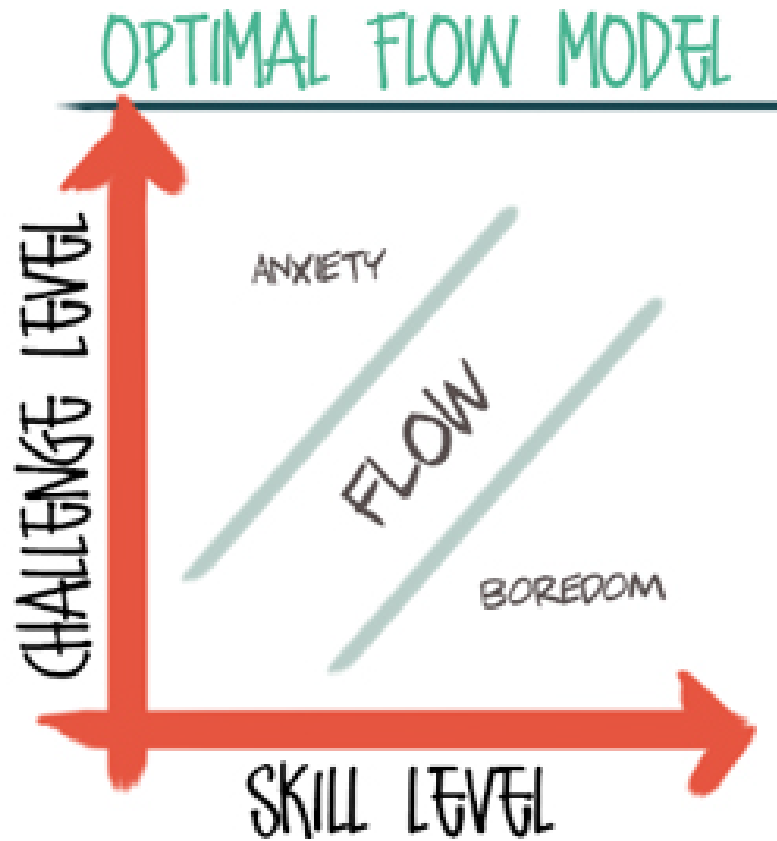
- Helping a patient, client or customer realize an optimal level of challenge and difficulty such that their performance feels energizing and more consistently successful to a surprising level
- This state of “flow” can:
 - Experience reduced stress associated with performance
 - Be dopaminergic
 - Stimulate the release of endorphins (analgesic)
 - Require fewer cognitive resources, “feels automatic”

Research in this field is often in sports. “Hot hand phenomenon”

Personalization of dosage?

NO CHALLENGE, FAMILIAR	1
EASY, BECOMING BORING	2
COMFORTABLE	3
WINNING TOO OFTEN	4
LET'S MAKE IT HARDER	5
I'VE GOT THIS!	6
CHALLENGING BUT DOABLE	7
SURPRISED WINS!	8
ALMOST TOO HARD	9
FEELS LIKE I AM FAILING	10

A Collaborative Challenge Point?



Physical Load

- For a person to improve, there must be a stimulus applied
- In physical load, we consider:
 - Resistance – as a percentage of maximum
 - Repetitions – specific to the fitness goal
 - Endurance – to reduce risk of injury or meet fitness goal
 - Frequency – with consideration for recovery and goal
- Periodization is a way to introduce cycles of training emphasis

Cognitive Load

- For a person to improve, there must be a stimulus applied
- In cognitive load, we consider:
 - Variety for adaptability
 - Difficulty in keeping with patient preference/tolerance
 - Disease or condition
 - Task specificity/roles/responsibilities
- As we have learned, cognitive wellness or recovery may be enhanced through DT or physical exercise to complement

The FITTVP principle of dosage

- Frequency
- Intensity
- Time
- Type
- Volume
- Progression

With “body health” (strength, endurance), we have a science for the dosage. This science continues to evolve, yet has a basis.

The FITTVP Principle: Brain health

- Frequency
- Intensity
- Time
- Type
- Volume
- Progression

With “brain health” our science is in its infancy. We can improve through exercise, diet/nutrition, sleep, medications, cognitive behavioral therapy, environmental manipulation.

In this session, we will present what is known, and what is emerging

Frequency

Physical

- Vary the body's exposure to stresses for optimal ROI
- Body parts
- Exercise type
- Not on consecutive days

Cognitive

- Daily

Intensity

Physical

- % of 1 Repetition Maximum
- % VO₂ maximum

Cognitive

- Speed
- Difficulty
- Duration
- Reward to error balance
- Consequences

Time

Physical

- Rotate fitness category through the week
- 150 minutes moderate intensity
- 75 minutes high intensity

Cognitive

- Dosage unknown
 - Executive function
 - Distraction
 - Reaction speed

Type

Physical

Cognitive

- Adaptability is key, accomplished through training variety
- Salience
- Task specificity to personal roles, responsibilities, preferences

Volume

Physical

- Tissues need rest, recovery and can experience breakdown over time

Cognitive

- Intensity
- Error frequency
- Perceived success

Person-specific

- Rewarding
- Depressing

Progression

Physical

- Tissues adapt to imposed demands
- Progression can be load, speed, repetitions, or time under tension
- Periodization can offer structure

Cognitive

- Leveling cognitive difficulty
- Autonomy in progression
- Balance reward - error

Application: Clinic, gym, studio

- Agility ladders with manual task overlay
- Swimming laps with digit span or facts to recall
- Novel sequences to repeat in a dance or group-exercise class
- Favorite conversation topics with comprehension test
- Name a new item in a category with each repetition
- Follow a rule for obstacle avoidance or search, change it
- Impulse control (go-no-go) based on a variable queue
- Search in a shopping bag for an item while moving
- Climb stairs naming a relative with each step
- Sit to stand, walk, bed mobility or balance with serial subtraction
- Explain driving directions to – from
- Change walking directions, change rules

Up Next

- Next, we will discuss ***Home Programs and Barriers***