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Your Brain Matters

SMARTfit Protocol For 12 Week Brain Health Program

For Older Adults

Introduction

SmartFit® Brain Training system integrates cognitive and motor skills training and evaluation programs, bringing together the benefits of both domains. The comprehensive cognitive training program that offers multiple programs designed to enhance cognitive abilities and promote brain health. It is a scientifically developed system that combines innovative technology with engaging exercises to target various cognitive domains and improve overall cognitive function.

The 12-week brain health program for Older Adults is a structured and intensive cognitive training program designed to improve cognitive abilities over a period of three months. This program is based on the principles of neuroplasticity, which suggest that the brain could reorganize and adapt in response to training and stimulation. The program derives from the ***SmartFit Dual-Task Matrix*** created by ***SmartFit®***.

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SmartFit Dual-Task Matrix

SmartFit® has created a ***SmartFit Dual-Task Matrix*** that integrates the concepts of the ***Physical and Cognitive Loading Matrix***, combining physical and cognitive challenges into a unified training approach with applying SmartFit cognitive training programs. The matrix is organized into ***nine categories***, spanning from clients with low levels, moderate levels or high levels of physical and cognitive abilities respectively.

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SmartFit Dual-Task Matrix

Physical Load ↓ / Cognitive Load →			
	Standing Track Color	Narrow Stance Seek Color	Semi-Tandem Spelling
	Cone Step Track Letter	Step Up Seek Letter	Lateral Step Equations
	Hurdle Step Track Symbol	Agility Ladder Seek Smiley	Squat to Press Memory Pairs

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Low Physical Abilities

Low Physical, Low Cognitive → STANDING + TRACKING : for clients with limited physical and cognitive abilities. In this category might include seated or standing exercises, combined with simple cognitive tasks.

Low Physical, Moderate Cognitive → STANDING + SEEKING : for clients with limited physical abilities but with a slightly higher cognitive capacity. In this category might include seated or standing exercises, focusing on coordination and attention exercises.

Low Physical, High Cognitive → STANDING + SPELLING : for clients with limited physical abilities but possess higher cognitive skills. In this category might include seated or standing exercises, and may involve mental challenges, such as complex problem-solving activities or memory tasks.

Moderate Physical Abilities

Moderate Physical, Low Cognitive → STEPPING + TRACKING
: for clients with average physical abilities but lower cognitive function. Exercises could involve low-impact aerobics activities combined with simple cognitive tasks.

Moderate Physical, Moderate Cognitive → STEPPING + SEEKING
: for clients with average physical abilities and moderate cognitive skills. Exercises may include moderate-intensity aerobic exercises with combined with mental challenges cognitive tasks.

Moderate Physical, High Cognitive → STEPPING + EQUATION
: for clients with average physical abilities and higher cognitive function. Exercises may include challenging aerobic activities such as lateral step combined with complex cognitive tasks, such as equations.

High Physical Abilities

High Physical, Low Cognitive → HURDLE STEPPING + TRACKING : for clients with high physical abilities but lower cognitive capacity. Exercises may involve high-intensity physical workouts combined with simplified cognitive tasks.

High Physical, Moderate Cognitive → AGILITY EXERCISE + SEEKING : for clients with high physical abilities and moderate cognitive skills. Exercises may include agility exercises and combined with mild cognitive tasks.

High Physical, High Cognitive → SQUAT + PRESS EXERCISE + MEMORY PAIRS : for clients with high physical abilities and high cognitive function. Exercises may include high-intensity physical exercise such as squatting or pressing exercises combined with complex cognitive challenge tasks such as Memory Pairs games.

The integrated approach of combining physical and cognitive challenges in training sessions stimulates multiple brain functions simultaneously, creating a synergistic effect. This simultaneous engagement of the body and mind promotes neuroplasticity, which refers to the brain's ability to reorganize and form new connections. This, in turn, enhances cognitive performance, improves memory, strengthens neural networks, and supports overall brain health.

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Some examples of Physical Exercises:

Standing

Standing tasks involve upright positions with both feet on the ground that possess variations in base of support, surface, and elicit demands on postural control.

Balancing

Static postures or dynamic movements that challenge base of support, postural sway, or bilateral/unilateral balance with or without modifications to standing surface.

Stepping

Unidirectional or multidirectional stepping patterns with or without equipment (i.e. steppers, hurdles, etc) that challenge lower extremity function.

Agility

Speed, agility and quickness drills that focus on primarily lower extremity directional change, reaction time, and pattern-based movement that requires coordination.

Squatting

Controlled lower extremity hip and knee flexion, either with bodyweight, load, or into a chair to specific range motion.

Pressing

May involve that forward or overhead pressing, unilaterally or bilaterally, with various forms of external resistance.

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Some examples of Cognitive Tasks:

Tracking

The Tracking Categories utilize one target screen at a time and the game progresses by lighting them up sequentially, Track categories may place greater demands on visual search, sustained attention and response time. More complex instructions may be given to enhance the demands of a tracking activity.

Seeking

The Seeking Categories offer multiple choice responses from a selected number of target screens and the player needs to make a cognitive decision on which target to strike, These categories may place greater demands on selective attention.

Reaction Time

The Reaction Time Categories labeled Lights Out turn on all target screens simultaneously and they have to be put out as fast as possible, These categories may place greater demands on processing speed, open-ended decision-making, and visual-perceptual abilities.

Memory

The Memory Categories are designed to train short-term memory. Based on the specific type of category selected, demands may differ upon abilities of visuospatial working memory and visual memory.

Language

The Language Category involves various language tasks, such as spelling forwards and backwards, navigating letters in different ways, or producing words that begin with certain letter.

Math

The Math Categories section offer a mathematical questions at the center target screen of with the other targets offering providing multiple choice answers. Equation tasks may place greater demands on speed of processing, certain aspects of executive functioning, and decision-making.

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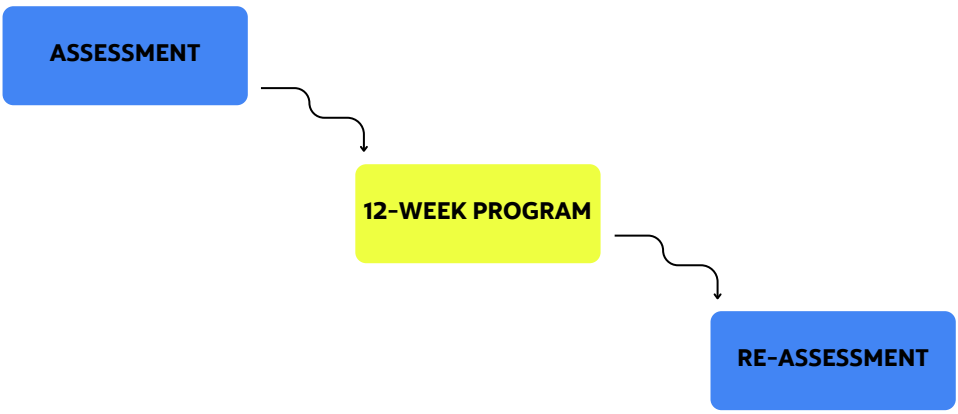
12-week Brain Health Program for Older Adult



The program typically begins with an initial assessment to establish a baseline of the individual's cognitive abilities. This assessment helps in identifying areas of strengths and weaknesses, allowing for a more personalized and targeted training plan.

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Protocol

Week 1 -2: Standing + Track

STANDING + TRACK

Week 3: Balance Exercise + Seek

BALANCE + SEEK

Week 4: Stepping + Reaction

STEPPING + CHASE

Week 5- 6: Agility Exercise + Memory

AGILITY + MEMORY

Week 7- 8: Squat Exercise + Language

SQUAT + LANGUAGE

Week 9: Press Exercise + Math

PRESS + EQUATION

Week 10: Combo 1

COMBO + COMBO

Week 11 - 12: Combo 2

COMBO 2 + COMBO 2

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