Patient: John Doe, ID #1303000002

Date Of Birth: January 26, 1947

Age: 71

Most Recent Dates of Testing
1. August 7, 2015, 11:13 AM *[BASELINE]*
2. August 16, 2016, 9:42 AM
3. August 23, 2017, 10:03 AM
4. August 30, 2018, 9:57 AM

Domains Tested: Memory, Executive Function (Thinking), Attention, Visual Spatial, Verbal Function, Problem Solving, Working Memory

Tests Included: Verbal Memory, Problem Solving, Stroop Interference, Non-Verbal Memory, Go-NoGo, Catch Game, Verbal Function, Visual Spatial Processing

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Brain Fitness Profile
Aug-30-18
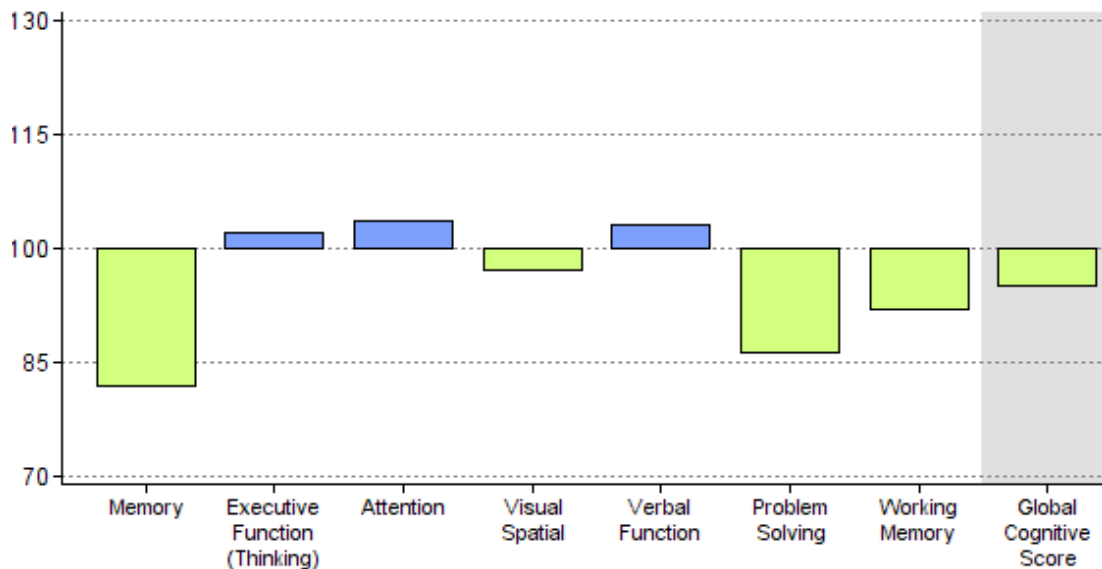
Notes
- The Global Cognitive Score is computed as the average of the available index scores.
- Normalized scores are standardized relative to cognitively healthy individuals of similar age and educational level and fit to a scale with mean=100 and SD=15.
- A brain fitness test is not used to diagnose any particular illness and does not replace consultation with a qualified physician or other healthcare professional.

Summary

The following cognitive areas were tested with the aim of identifying areas for targeted cognitive training: *Memory*, *Executive Function*, *Attention*, *Visual Spatial*, *Verbal Function*, *Problem Solving*, *Working Memory*.

For this visit:
- Areas of strength include: *Executive Function*, *Attention*, *Verbal Function*.
- Areas needing improvement include: *Memory*, *Visual Spatial*, *Problem Solving*, *Working Memory*.

As compared to the last NeuroTrax testing session, performance changed in one area:
- Areas that improved include: *Verbal Function*.
- Areas that worsened from the previous session: *None*.

Areas needing improvement on the Baseline session that have not improved include:
- *Visual Spatial*, *Problem Solving*, *Working Memory*.

Areas in Need of Improvement

The cognitive areas in need of improvement and that should be the focus of the personalized brain fitness program are:
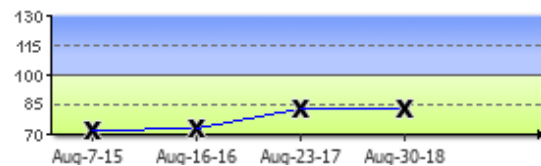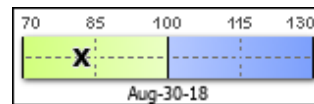- *Memory*, *Visual Spatial*, *Problem Solving*, *Working Memory*.

Points To Consider

1. In 2010, the U.S. Department of Health and Human Services published an evidence-based report[1] with recommended self-help activities that may boost your patient's brain health. Activities with at least Level 2 scientific evidence include:

   a. Social engagement[2]

   b. Mental engagement (e.g., brain training programs)[3]

   c. Physical exercise[4]

   d. Reducing body weight[5]

   e. A diet rich in vegetables, fish, olive oil, legumes, and whole grains (e.g., the Mediterranean diet)[6].

2. Specific points regarding your patient's Areas in Need of Improvement on the Brain Fitness Profile are:

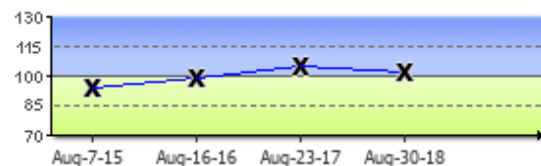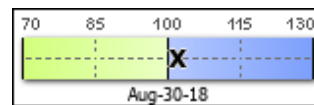   a. Memory may improve with certain types of brain training exercises[7-9].
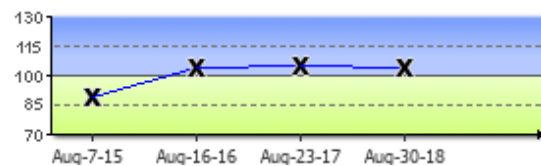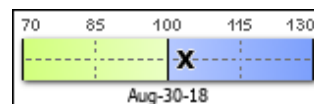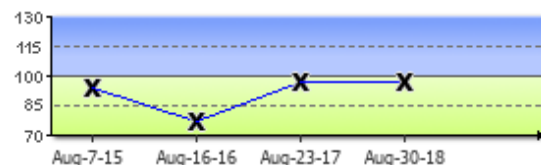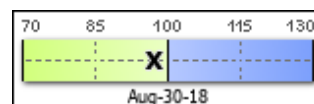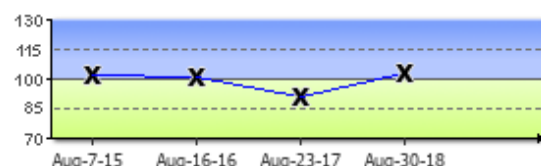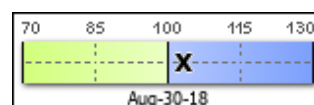
Global Cognitive Score: 95.2
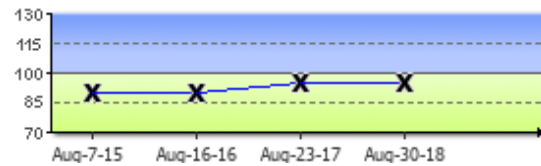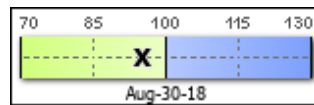
Memory: 82

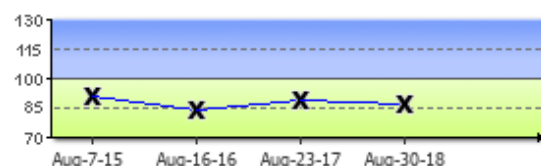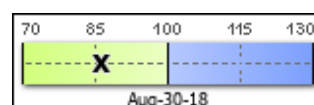## Executive Function (Thinking): 102

Attention: 103.7

Visual Spatial: 97.1

Verbal Function: 103

Problem Solving: 86.2

Working Memory: 92.1
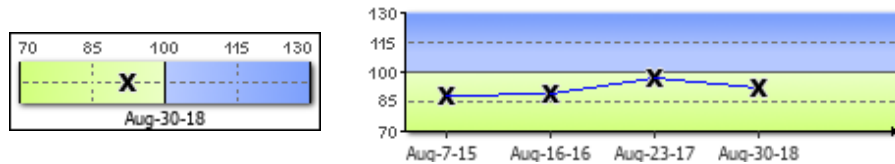
Index Score Legend

	[BASELINE] Aug-7-15 11:13 AM	Aug-16-16 9:42 AM	Aug-23-17 10:03 AM	Aug-30-18 9:57 AM
Global Cognitive Score	**89.7**	**89.4**	**95.1**	**95.2**
Memory	**70.8**	**72.5**	**82**	**82**
Verbal Memory: Total Accuracy	64.0	64.0	62.8	64.9
Delayed Verbal Memory: Accuracy	61.8	78.8	74.8	74.8
Non-Verbal Memory: Total Accuracy	80.8	76.9	101.3	99.1
Delayed Non-Verbal Memory: Accuracy	76.7	70.4	89.1	89.1
Executive Function (Thinking)	**94**	**99**	**105.4**	**102**
Go-NoGo: Composite Score	86.3	101.4	106.0	105.4
Stroop Interference: Composite Score, Level 3	90.8	82.6	84.3	81.3
Catch Game: Total Score	105.1	113.1	125.9	119.4
Attention	**88.4**	**104**	**104.8**	**103.7**
Go-NoGo: Rsp Time	84.3	101.0	105.6	103.7
Go-NoGo: Rsp Time Std Dev	72.6	103.9	107.8	95.1
Stroop Interference: Rsp Time, Level 2	108.4	107.1	100.9	112.4
Visual Spatial	**94**	**76.4**	**97.1**	**97.1**
Visual Spatial Processing: Accuracy	94.0	76.4	97.1	97.1
Verbal Function	**102.6**	**101.4**	**91.1**	**103**
Verbal Function: Rhyming, Accuracy	102.6	101.4	91.1	103.0
Problem Solving	**90.6**	**83.5**	**88.5**	**86.2**
Problem Solving: Accuracy	90.6	83.5	88.5	86.2
Working Memory	**87.4**	**88.8**	**97**	**92.1**
Go-NoGo: Composite Score	86.3	101.4	106.0	105.4
Verbal Memory: Accuracy, Repetition 1	73.7	80.1	76.5	82.8
Non-Verbal Memory: Accuracy, Repetition 1	102.2	84.9	108.4	87.9

DI - Data Insufficient for a Score

'Composite Score' is computed from Accuracy and Response Time.
Rsp Time and Rsp Time Std Dev computed for correct responses.

Detailed Test Results

	[BASELINE] Aug-7-15 11:13 AM		Aug-16-16 9:42 AM		Aug-23-17 10:03 AM		Aug-30-18 9:57 AM	
COMPUTER ORIENTATION	NORM	RAW	NORM	RAW	NORM	RAW	NORM	RAW
Mouse: Accuracy		100%		NAB		NAB		NAB
Keyboard: Accuracy		100%		NAB		NAB		NAB
Word Reading: Accuracy		100%		NAB		NAB		NAB
Picture Identification: Accuracy		100%		NAB		NAB		NAB
Color Discrimination: Accuracy		100%		NAB		NAB		NAB

GO-NOGO RESPONSE INHIBITION	N	R	N	R	N	R	N	R
Accuracy	112.1	100%	107.0	97%	108.6	97%	112.8	100%
Response Time	84.3	577ms	101.0	461ms	105.6	471ms	103.7	491ms
Response Time Standard Deviation	72.6	257ms	103.9	105ms	107.8	98ms	95.1	195ms
Errors of Commission (max. 12)	114.2	0	105.9	1	106.1	1	112.7	0
Errors of Omission (max. 18)	105.9	0	105.9	0	106.9	0	106.9	0

Response Time for Errors of Commission	-	-	83.3	581ms	96.6	515ms	-	-

VERBAL MEMORY	N	R	N	R	N	R	N	R
Immediate Recognition								
Accuracy, Repetition 1	73.7	20%	80.1	30%	76.5	20%	82.8	30%
Accuracy, Repetition 2	68.4	30%	75.1	40%	65.6	20%	65.6	20%
Accuracy, Repetition 3	67.1	30%	61.0	20%	62.8	20%	62.8	20%
Accuracy, Repetition 4	66.5	30%	60.5	20%	63.0	20%	63.0	20%
Delayed Recognition								
Accuracy	61.8	10%	78.8	40%	74.8	30%	74.8	30%

NON-VERBAL MEMORY	N	R	N	R	N	R	N	R
Immediate Recognition								
Accuracy, Repetition 1	102.2	50%	84.9	25%	108.4	50%	87.9	25%
Accuracy, Repetition 2	78.1	25%	78.1	25%	96.8	50%	96.8	50%
Accuracy, Repetition 3	78.7	25%	78.7	25%	109.7	75%	109.7	75%
Accuracy, Repetition 4	77.2	25%	77.2	25%	93.2	50%	100.1	63%
Delayed Recognition								
Accuracy	76.7	25%	70.4	13%	89.1	38%	89.1	38%

PROBLEM SOLVING	N	R	N	R	N	R	N	R
Accuracy (Non-Verbal IQ)	90.6	36%	83.5	24%	88.5	28%	86.2	24%

STROOP INTERFERENCE	N	R	N	R	N	R	N	R
No Interference: Letter Color [1]								
Accuracy	95.6	90%	108.2	100%	109.6	100%	109.6	100%
Response Time	106.8	645ms	105.9	669ms	109.9	602ms	112.3	522ms
Response Time Standard Deviation	110.1	179ms	111.3	155ms	109.8	188ms	111.4	150ms
No Interference: Word Meaning [2]								
Accuracy	107.7	100%	107.7	100%	107.2	100%	107.2	100%
Response Time	108.4	528ms	107.1	551ms	100.9	711ms	112.4	524ms
Response Time Standard Deviation	105.3	160ms	104.9	168ms	91.4	375ms	111.5	97ms
Interference: Color vs. Meaning [3]								
Accuracy	89.5	40%	81.6	20%	78.1	20%	74.9	13%
Response Time	105.2	650ms	100.7	795ms	104.4	822ms	92.4	1231ms
Response Time Standard Deviation	108.8	150ms	106.2	211ms	109.7	230ms	109.2	243ms

CATCH GAME	N	R	N	R	N	R	N	R
Time to Make 1st Move	107.0	676ms	110.7	627ms	121.2	557ms	120.1	572ms
Time to Make 1st Move Standard Deviation	114.1	134ms	112.4	146ms	117.1	129ms	120.8	99ms
Average Direction Changes per Trial	114.2	0.10	110.7	0.15	114.0	0.15	114.0	0.15
Total Score (max. 1000)	105.1	649	113.1	760	125.9	840	119.4	749

VERBAL FUNCTION	N	R	N	R	N	R	N	R
Rhyming, Accuracy	102.6	75%	101.4	73%	91.1	51%	103.0	76%
Matching, Accuracy	92.2	83%	100.4	90%	107.9	97%	89.2	77%

VISUAL SPATIAL PROCESSING	N	R	N	R	N	R	N	R
Accuracy	94.0	44%	76.4	19%	97.1	38%	97.1	38%

NAB - Not Available for Battery Ordered

DI - Data Insufficient for a Score

FP - Failed Practice

Rsp Time and Rsp Time Std Dev computed for correct responses.

Psychosocial Scales

MOOD SCALE

Date Given: August 30, 2018

Total Score: <u>6</u>

Classification: According to standard cutoffs for this instrument[10-12], the patient's score is <u>*suggestive of depressed mood*</u>.

Items:

1.	Are you basically satisfied with your life?	*No*
2.	Have you dropped many of your activities and interests?	*Yes*
3.	Do you feel that your life is empty?	*No*
4.	Do you often get bored?	*No*
5.	Are you in good spirits most of the time?	*No*
6.	Are you afraid that something bad is going to happen to you?	*No*
7.	Do you feel happy most of the time?	*Yes*
8.	Do you often feel helpless?	*No*
9.	Do you prefer to stay at home, rather than going out and doing new things?	*No*
10.	Do you feel you have more problems with memory than most?	*No*
11.	Do you think it is wonderful to be alive now?	*No*
12.	Do you feel pretty worthless the way you are now?	*No*
13.	Do you feel full of energy?	*Yes*
14.	Do you feel that your situation is hopeless?	*Yes*
15.	Do you think that most people are better off than you are?	*Yes*

Scale:

0-5: Inconsistent with depressed mood.
6-10: Suggestive of depressed mood.
>10: Consistent with depressed mood.

NERVOUSNESS AND ANXIETY SCALE

Date Given: August 30, 2018

Total Score: *47*

Classification: According to standard cutoffs for this instrument[13,14], the patient's anxiety level is *within the mild to moderate range*.

Items:

1.	I feel more nervous and anxious than usual.	*Most or all of the time (4)*
2.	I feel afraid for no reason at all.	*Most or all of the time (4)*
3.	I get upset easily or feel panicky.	*None or a little of the time (1)*
4.	I feel like I'm falling apart and going to pieces.	*None or a little of the time (1)*
5.	I feel that everything is all right and nothing bad will happen.	*None or a little of the time (4)*
6.	My arms and legs shake and tremble.	*Most or all of the time (4)*
7.	I am bothered by headaches, neck and back pains.	*Some of the time (2)*
8.	I feel weak and get tired easily.	*Most or all of the time (4)*
9.	I feel calm and can sit still easily.	*None or a little of the time (4)*
10.	I can feel my heart beating fast.	*None or a little of the time (1)*
11.	I am bothered by dizzy spells.	*None or a little of the time (1)*
12.	I have fainting spells or feel like it.	*Most or all of the time (4)*
13.	I can breathe in and out easily.	*Most or all of the time (1)*
14.	I get feelings of numbness and tingling in my fingers, toes.	*None or a little of the time (1)*
15.	I am bothered by stomachaches or indigestion.	*None or a little of the time (1)*
16.	I have to empty my bladder often.	*Some of the time (2)*
17.	My hands are usually dry and warm.	*Most or all of the time (1)*
18.	My face gets hot and blushes.	*None or a little of the time (1)*
19.	I fall asleep easily and get a good night's rest.	*Good part of the time (2)*
20.	I have nightmares.	*Most or all of the time (4)*

Scale:

20-44: Not excessively nervous.
45-59: Within the mild to moderate range.
60-74: Within the marked to severe range.
75-80: Within the extreme range.

GENERAL NOTES

On the performance graphs

- Range of 1 standard deviation (SD) above and below the average standard score is indicated.
- Scores outside the 70-130 range are plotted as circles.
- Timeline charts are shown if the patient had two or more testing sessions.
- Invalid scores do not appear on the timeline charts.
- Dates of invalid scores appear in parentheses.

REFERENCES

1. Williams et al. 2010; Agency for Healthcare Research and Quality Publication 10-E005.
2. Barnes et al. Neurology 2004;63:2322-6.
3. Willis et al. JAMA 2006;296:2805-14.
4. Angevaren et al. Cochrane Database of Systematic Reviews 2008:CD005381.
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6. Scarmeas et al. Arch Neurol 2009;66:216-25.
7. Mahncke et al. Proc Natl Acad Sci U S A. 2006 Aug 15;103:12523-8.
8. Stuss et al. J Int Neuropsychol Soc 2007 Jan;13:120-31.
9. Kaschel et al. Neuropsychol Rehabil 2002;12:127-53.
10. Sheikh & Yesavage. In Clinical Geronotology: A Guide to Assessment and Intervention. 1986. New York: The Haworth Press.
11. Yesavage. http://web.stanford.edu/~yesavage/GDS.english.short.score.html [accessed 23-Jan-2019].
12. Yesavage et al. J Psychiatr Res 1983;17:37-49.
13. Zung. Psychosomatics 1971 Nov-Dec;12:371-9.
14. Zung. Am J Psychiatry 1986;143:1471-2.

DISCLAIMER

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NeuroTrax™
Innovative Science for Brain Health

Clinical Summary

Patient: John Doe, ID 1303000002   **Date of Testing: August 30, 2018, 9:57 AM**

FOR TEST SUPERVISOR (Technician)

Supervisor Questionnaire

		1	2	3	4	5	
▫ How difficult were the tests for the subject?	easy	✔					hard
▫ Did the subject find the tests easy to use?	easy		✔				hard
▫ Did the subject find the tests easy to understand?	easy		✔				hard
▫ How well do you think the subject performed?	best	✔					poorest
▫ Comments	*None*						

Cooperation With Instructions

_____

_____

Comments

_____

_____

_____

Name: _____ **Signature:** _____ **Date:** _____

FOR PROFESSIONALS

Impression

_____

_____

_____

Plan

_____

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Name: _____ **Signature:** _____ **Date:** _____