

Cognitive testing with neotivCare: findings letter from 05.12.2023

01 | Patient data

Name: Doe

First Name: John

Date of birth: 01.01.1950 - 74 years

Sex: Male

02 | Method

- Patient regularly performs cognitive tests with the help of a mobile application (app)
- Application period: 12 weeks
- Test runs: 12 (three memory tests repeated four times each) - Details of tests performed: see pages 2 and 3.
- The results of usable test runs lead to a composite score

03 | Intended Use

- Assessment of cognitive performance, especially memory
- Recognition of cognitive impairment, especially in the area of memory functions

04 | Result

Test period	Composite Score ¹ (Z-normalized ²)	Normal range	Classification (Note additional information)
05.09.2023 - 05.12.2023	- 2,3	Composite Score ³ > - 0,45 ⁴	Measured memory performance is outside the normal range

Additional information:

According to the latest scientific findings, a **composite score value of < -0,41 (sensitivity 85% / specificity 75%)** may already indicate reduced memory performance.

1 The neotivCare composite score for memory is based on the results of three neotivCare tests. At least two runs of each test must have been completed evaluably. The worst result of each test is not taken into account.

2 Represents the deviation of the result from the mean of the reference group as a Z-value.

3 The reference group consists of cognitively unimpaired women and men aged 60 to 80 years. If the patient is outside this age group, the composite score must be interpreted with caution.

4 In the reference study, a sensitivity of 79% and a specificity of 75% are achieved with a cut-off value of -0.45.

05 | Detailed results

- Patient’s visual ability: no limitations relevant to the memory tests

Test runs ¹	Date	Time	Z-normalized value ²	Self- assesement Performance ⁴	Self- assesement Concentration ⁴	Special events ⁵	
Photographic memory (recognition memory)	05.09.23	14:00	+1				
Memory for spatial relationship of objects and scenes	12.09.23	07:00	0				
Memory precision for objects and spaces	19.09.23	11:00	-2,3		Question skipped	Question skipped	alcohol, no sleep
Photographic memory (recognition memory)	26.09.23	07:15	+1				
Memory for spatial relationship of objects and scenes	03.10.23	09:00	+1				
Memory precision for objects and spaces	10.10.23	08:30	+1				
Photographic memory (recognition memory)	17.10.23	07:00	0				
Memory for spatial relationship of objects and scenes	24.10.23	11:30	-3,7				sick with a cold
Memory precision for objects and spaces	31.10.23	08:20	+2				
Photographic memory (recognition memory)	07.11.23	07:00	+3,5				
Memory for spatial relationship of objects and scenes	14.11.23	09:00	0				
Memory precision for objects and spaces	21.11.23	07:30	-1				

Reasons for abnormal variations in test timing should be discussed with the patient.

1 Details of the memory tests on page 3.
 2 Represents the deviation of the result as a Z-value (standard deviation). The Z-normalization is based on the reference group mentioned (see page 1).
 3 Self-assessment of performance and concentration scaling: 5-point Likert scale (1: Very good/2: Good/3: Medium/4: Bad/5: Very bad)
 4 Question: Has anything special happened in the last 7 days that you would like to tell us about? (e.g. accident, illness, holiday)
 5 At least two runs of each test must have been completed and analyzed. The worst result of each test is not taken into account.
 6 If, in too many instances, no response was provided within the specified time, the test cannot be analyzed.
 7 In some tests, phase 2 must be started within a specified time. This time was not adhered to.

Self-assessment scale

06 | Explanation of the function of the three memory tests

Memory precision for objects and rooms

Test name in the app: Spot the difference

In this test, individual pictures of objects and rooms are shown. For each picture, the patient decides whether it is a repeated or a new picture. A new picture is an object that is slightly different in shape or a room that is different in geometry. There are two levels of difficulty.

In the first level, one object/space is learned, while in the second level, the patient has to remember two.

Memory for spatial relationship of objects and scenes

Testname in the app: Remember the objects

In this test, two objects are shown in each room. The objects and their respective position in the room must be learned (encoding/memory). After 30 minutes, the long-term memory for the object affiliation and position in the room is tested.

Photographic memory (recognition memory)

Test name in the app: Inside & Outside

In this test, photographic images representing indoor or outdoor scenes are presented. For learning (encoding), the patient decides whether the scene presented is an indoor or outdoor scene. After 65 minutes, the photographic memory (recognition) is tested, for which the users distinguish the learned images from new images.

Required visual performance

This test checks whether the patient can perceive the test-relevant differences between images on their mobile device.

07 | Other notes

1. Creation of the findings letter

By handing over this document, the patient assures that he/she has carried out the tests independently with the help of the neotivCare app and that no help from third parties has been accepted. This document was written by the patient using the neotivCare app by the patient.

2. Carrying out the tests

The patient has carried out the tests listed above in consultation with the attending physician.

3. Interpretation / evaluation of the results

It is recommended that the results of the neotivCare memory tests be discussed with a family doctor, a specialist or a doctor in a special clinic (for example, memory outpatient clinic).

4. Certification

neotivCare is a risk class I medical device compliant with Directive 93/42/EEC (MDD).

5. Further information

Further information and instructions for use are provided on the website www.neotiv-care.com.