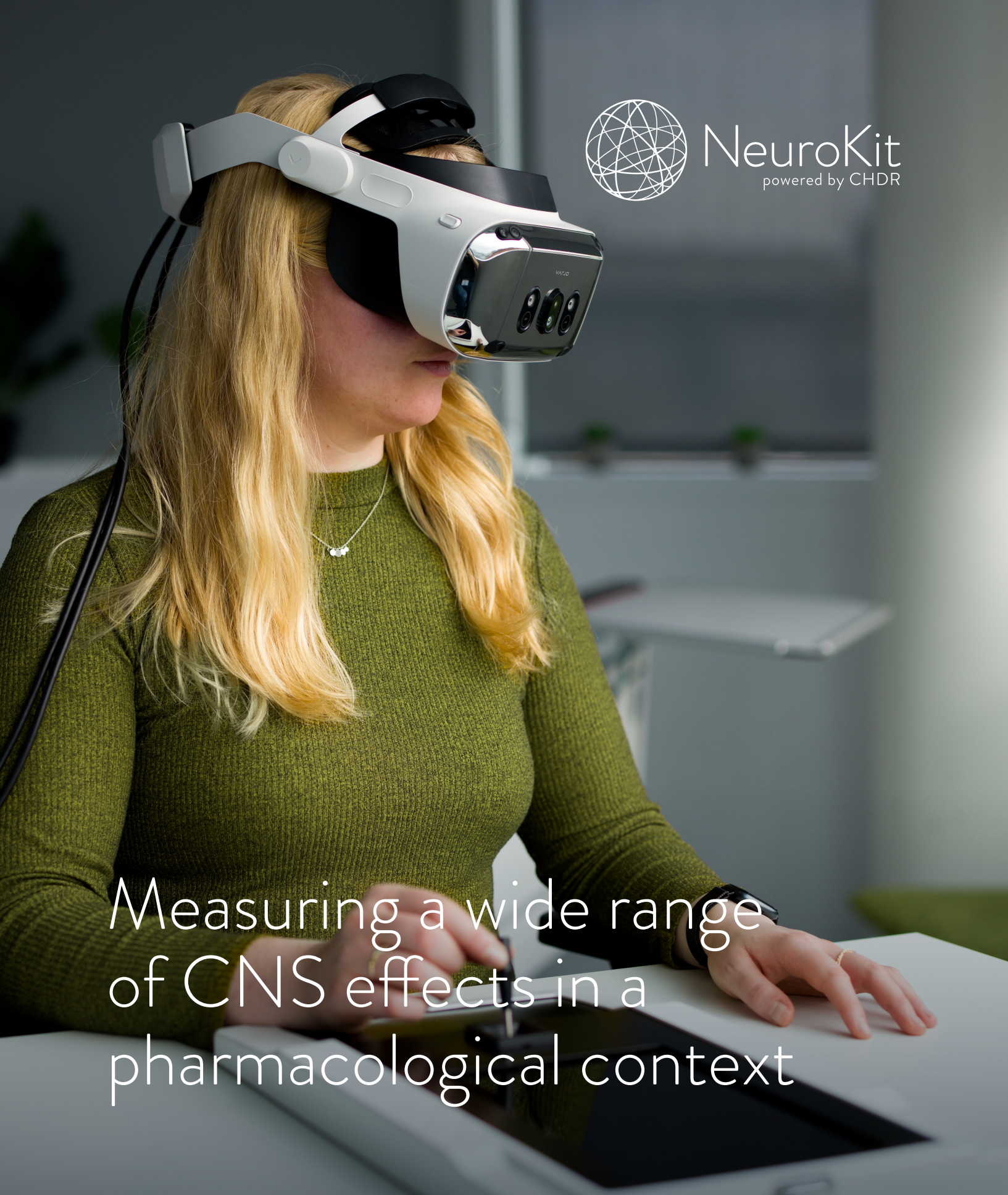


NeuroKit
powered by CHDR

Measuring a wide range of CNS effects in a pharmacological context

Delivering CNS Insights in Early-Phase Studies

At CHDR, we specialise in data-driven clinical trials, with a particular focus on pharmacodynamics. Our goal is to provide deep insights into the central nervous system (CNS) effects of new compounds from the very beginning of development. To support this, we offer the NeuroKit®—a portable, comprehensive solution for CNS testing at any clinical site.

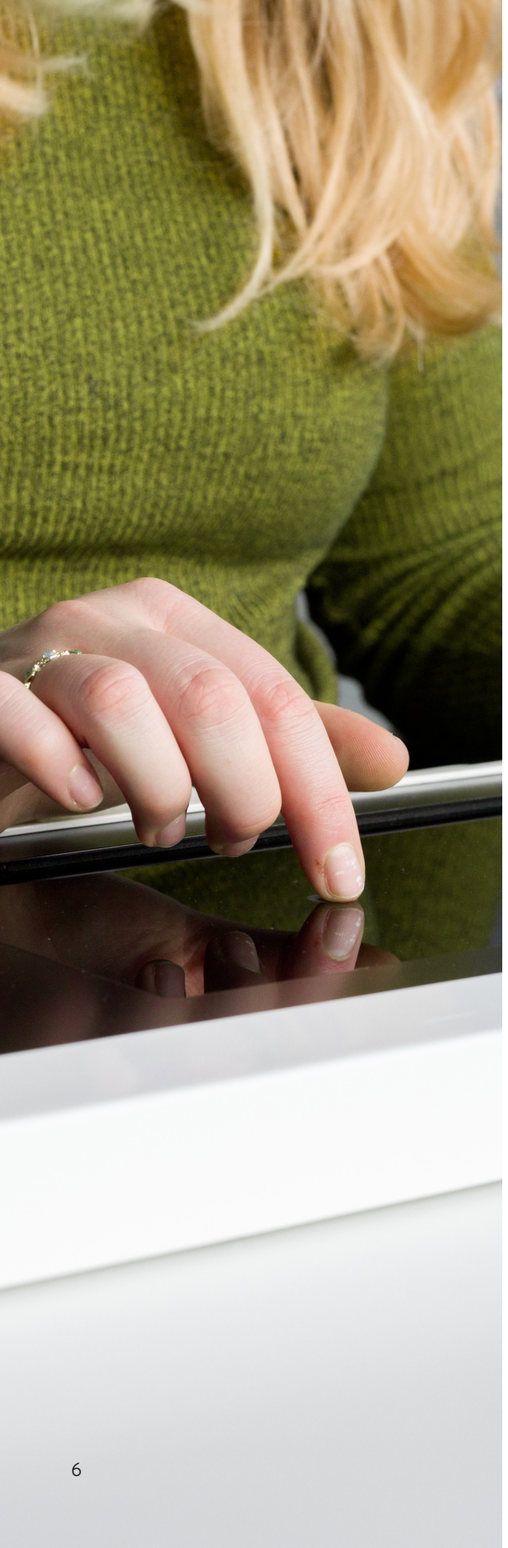
The NeuroKit®
A Portable CNS Test Battery Based on the Trusted NeuroCart®

The NeuroKit® is a portable version of CHDR's established NeuroCart®, a validated CNS test battery developed over 30 years of research. Designed to assess a wide range of neurophysiological and neuropsychological parameters, the NeuroKit® provides essential pharmacodynamic data for compounds targeting the CNS, delivered with the same precision accuracy and reliability as the NeuroCart®.

In drug development, understanding whether a compound crosses the blood-brain barrier and induces measurable CNS effects is critical. The NeuroKit® enables this by measuring a variety of CNS functions in a clinical setting, helping to correlate a compound's effects with its concentration in the body. This data is crucial for determining the pharmacological profile of a compound and can be compared with existing reference compounds from CHDR's extensive database.

The portability of the NeuroKit® enables its deployment at external research sites, allowing sponsors to gather essential CNS data without the need for a dedicated research facility. With minimal training, clinical staff can operate the system, and all data is securely transmitted to CHDR for expert analysis. This approach allows us to maintain the high standards of data quality and consistency that CHDR is known for, regardless of where the study takes place.

The NeuroKit® is an invaluable tool for sponsors looking to extend their reach beyond a single location while leveraging CHDR's extensive expertise in CNS testing to achieve reliable and precise results.



The NeuroKit®
a closer look

Adaptive tracking
Adaptive tracking measures visuomotor coordination and vigilance. Adaptive tracking is particularly sensitive to drugs that can induce ataxia. In this test, the subject uses a joystick to move a small dot so that it stays within a continuously moving circle in a Virtual Reality headset. During the test, the speed of the circle is adjusted in response to the subject's ability to keep the dot in the circle, ensuring that the test is adapted to the individual subject.

Body sway
The body sway test measures the subject's body movements in a single direction (usually forward/backward movement). Body sway is measured while the subject stands with his/her eyes closed. This is performed using an accelerometer attached at the lower back of the participant.

N-back test
The N-back test is a cognitive task used to assess working memory and attention. Participants are presented with a sequence of stimuli (e.g., letters or numbers) and must identify when the current stimulus matches one presented N steps earlier. The difficulty increases as the value of N rises, testing working memory capacity and cognitive flexibility.

VAS Bond & Lader
The VAS Bond & Lader is a visual analogue scale used to assess subjective feelings of mood and alertness. It consists of a line, with endpoints representing extreme feelings such as "calm" to "anxious" or "alert" to "drowsy." Participants mark a point on the line that best represents their current state, and the position is later quantified to give a score.

VAS Bowdle
The VAS Bowdle is a visual analogue scale used to assess subjective feelings of sedation or sleepiness. It consists of a line with endpoints representing opposite feelings, such as "alert" and "sedated." Participants mark a point on the line that best reflects their current state of sedation.

Saccadic eye movement measurement
Saccadic eye movements are highly sensitive and specific measures of the subject's alertness, sedation and tranquility. Saccadic peak velocity is one of the most sensitive measures of alertness currently available in drug research. Participants are using a Virtual Reality headset and are instructed to continuously look at a dot. As the dot 'jumps' from side to side on the screen, the response of each eye is monitored.

Smooth pursuit eye movement measurement
Measuring smooth pursuit eye movements provides a measure of the participants' coordination. In this test, the participant is using a Virtual Reality headset and is instructed to follow a dot as it moves smoothly from side to side.

Finger tapping test
The finger tapping task is a simple motor test commonly used to assess fine motor control, coordination and neurological function. During the task, participants are asked to tap their finger (or fingers) against a tablet at a rapid pace for a set period. The number of taps or the speed at which the participant can perform the task is measured. This task is used to evaluate cognitive and motor functions, and it can help detect neurological conditions or other disorders that affect motor skills.

Pharmaco-EEG
Resting-state EEG is highly sensitive to the effects of pharmacological substances on the brain and is therefore an established method for assessing drug effects on central nervous system (CNS) function. As standard reports capture only part of the information available in EEG data, CHDR has developed a processing pipeline that enables more detailed and comprehensive analysis. NeuroKit uses the same established setup for EEG data capture and analysis that has been used at CHDR's clinical site in Leiden for decades.

Contact

To learn how NeuroKit® can help you quickly obtain accurate, reliable CNS data, and to learn about our full range of services, contact us today.

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