Two-Hand Coordination (2HAND)

Test for the examination of visual-motor coordination

The test 2HAND reliably assesses the eye-hand and hand-hand coordination. The layout of the track makes a comparison of the coordination performance possible for simple and more demanding tasks.

Application:
Examination of visual-motor coordination (eye-hand and hand-hand coordination), by moving a dot on a track, through the coordination of both hands.

Main areas of application: Aptitude diagnostics in the performance area, motor capacity diagnostics, industrial and organizational psychology, traffic psychology, sport psychology.

Theoretical background:
Two aptitude components lie at the center of the test requirement: sensomotor coordination between eye and hand as well as between both hands. The special difficulty in coordinating both hands lies in the capacity to visually assess left and right deviations between target and actual state and to correct with the hands accordingly. Additionally the capacity to anticipate the course of movement plays an important role.

Administration:
The task consists in moving an illuminated dot on a preset track, using two control knobs or two joysticks. This track consists of three sections, which make different demands on the coordination of left and right hand. The dot is to be moved from the right to the left.

Test forms:
Four test forms are available:
S1: Administration with joysticks, 10 runs
S2: Administration with joysticks, 4 runs
S4: Administration with control knobs, 10 runs
S5: Administration with joysticks (inverted direction assignment), 10 runs.
**Scoring:**
The following variables are scored:
"Overall mean duration"
"Overall mean error duration"
"Overall percent error duration" (results from the ratio of overall error duration to overall duration)
"Coordination difficulty" (time difference standardized to the length of the way between sections without or without need for coordination). This variable shows, with how much precision the coordination requirement is mastered. The value expresses, by which factor the time requirement increases, if the same distance is mastered once with (semi-circle and V-shape) and once without sensory-motor coordination requirement (inverted L). The variable is therefore a measure for the respondent's coordination capacity.

**Reliability:**
The inner consistency (Cronbach's Alpha) varies between $r=.85$ and $r=.97$.

**Validity:**
The content validity of the test in the sense of logical validity is given. Karner and Neuwirth (2000) were able to show, that the performance in 2HAND with $r=.50$ is significantly connected to the assessment of driving performance. Furthermore these authors were able to prove that persons with P<33 received significantly worse results in a standardized driving test.

**Norms:**
For test form S1 comparison values with healthy adults (N=151), Swedish job seekers (N=209), applicants for a technical training (N=186), adults in Sweden (N=168), traffic-psychological clients (N=126), people with evident alcohol problems (N=100) and BT norms (N=110) are available. Test form S2 was standardized using adults (N=244), Luxemburgian job seekers (N=2867) and traffic-psychological clients (N=54).

Results of test form S4 can be compared with adults (N=115), Swedish job seekers (N=386), adults in Sweden (N=125), professional drivers from Macao (N=187) and traffic psychological clients (N=930). Test form S5 was standardized with adults (N=182).

**Testing time:**
About 10 minutes.