Table H-2. Diagnostic accuracy of included studies with subjects ages 7-17

| **Quality (Study)**a  **N Subjects**  **Diagnostic Tool(s)** | **Gold Standard** | **Overall Accuracy** | **AUC** | **Sensitivity** | **Specificity** | **PPV** | **NPV** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Biometric devices** |  |  |  |  |  |  |  |
| Poor quality (Martin-Martinez, 20124)  63 subjects  (31 ADHD, 32 non-ADHD)   1. Actigraphy-PCA1 [Px00(15 min, D) + Pz22 (1 min, FR) + Py01 (15 min, AA)] | Case group was diagnosed as having the combined kind of ADHD according to the DSM-IV criteria | 90.48% | 94.96% | 96.77% | 84.38% |  |  |
| **EEG and imaging studies** |  |  |  |  |  |  |  |
| Fair quality (Markovska-Simoska, 20165)  60 subjects  (30 ADHD, 30 non-ADHD)  1. EEG Theta-Beta Ratio  2. EEG absolute theta  3. EEG absolute beta  4. EEG relative theta  5. EEG relative beta | Team of neuropsychologist, pediatrician and clinical psychologist. Also used Conners rating scale |  |  | 58.6%  100%  86.2%  68.6%  0% | 92.2%  71.1%  34.4%  60.0%  100% |  |  |
| Fair quality (Gonzalez, 20136)  43 subjects  (22 ADHD, 21 non-ADHD)   1. EEG IM generalized 2. EEG IM beta band | Physical examination, clinical interview and a structured checklist covering DSM-IV and ICD-10 criteria | 86.7%  74.4% |  | 81.80%  63.60% | 90.50%  90.50% |  |  |
| Fair quality (Liechti, 20137)  62 subjects   1. ADHD, 30 non-ADHD) 2. EEG + event-related potentials–including all stepwise variables | Children with ADHD combined subtype (DSM-IV), aged 8–16 years, were diagnosed using the semi- structured clinical diagnostic interview PACS (parental account of children’s symptoms; plus Conners teacher rating scale—revised | 72.6% |  | 71.9% | 73.3% |  |  |
| Fair quality (Castro-Cabrera, 20108)  46 subjects  (23 ADHD, 23 non-ADHD)   1. Event-related potentials–best combination of features | Medical diagnostic was determined by neurophysiological evaluation based on clinical criteria of DSM IV | 91.3% | 94% | 96% | 87% |  |  |
| Fair quality (Soliva, 20109)  Subgroup = ADHD subtypes  78 subjects  (39 ADHD, 39 non-ADHD)   1. MRI of caudate body volume | ADHD subjects were diagnosed by a team consisting of a psychologist and a psychiatrist. Scoring was based on parent and teacher rating scales, as well as a semi-structured clinical interview, which systematically reviewed DSM-IV-TR criteria for ADHD, oppositional-defiant disorder, conduct disorder, and depressive and anxiety disorders (DICA-IV). | 84% |  | 60.0% | 95.0% |  |  |
| **EEG, imaging, and CPT studies** |  |  |  |  |  |  |  |
| Fair quality (Kim, 201510)  97 subjects  (53 ADHD, 44 non-ADHD)   1. EEG theta-phase gamma-amplitude coupling 2. EEG delta wave 3. EEG theta/beta ratio 4. IVA CPT commission error 5. IVA CPT omission error | ADHD Diagnosis was based on a Korean version of the Diagnostic Interview Schedule for Children Version IV (DISC-IV) and the diagnoses were confirmed by multiple child and adolescent psychiatrists. The DISC-IV uses diagnostic criteria as specified in DSM-IV. | 71.1%  63.3%  58.7%  75.3%  68.1% |  | 60%  56%  49%  66%  58% | 23%  27%  30%  18%  27% |  |  |
| Fair quality (Kim, 201511)  157 subjects  (85 ADHD, 72 non-ADHD)   1. EEG delta wave 2. EEG theta wave 3. EEG theta/beta ratio 4. IVA CPT commission error 5. IVA CPT omission error | ADHD Diagnosis was based on a Korean version of the Diagnostic Interview Schedule for Children Version IV (DISC-IV) and the diagnoses were confirmed by multiple child and adolescent psychiatrists. The DISC-IV uses diagnostic criteria as specified in DSM-IV. | 60.8%  56.4%  45.7%  82.1%  78.6% |  | 60.1%  48.2%  47.1%  68.1%  64.7% | 43.0%  40.5%  49.4%  9.54%  13.7% |  |  |
| Fair quality (Ogrim, 201212)  101 subjects  (62 ADHD, 39 non-ADHD)   1. EEG theta 2. EEG theta/beta ratio 3. Visual CPT omission error | All diagnoses were according to DSM IV-TR and accepted clinical guidelines. A senior neuropsychologist (GO) was responsible for diagnostic conclusions after discussions in the team, which included a pediatrician and a clinical psychologist. | 63%  58%  85% |  |  |  |  |  |
| **CPT studies** |  |  |  |  |  |  |  |
| Fair quality (Park, 201613)  Subgroups = ADHD subtype  114 subjects  (79 ADHD, 35 non-ADHD)   1. Advanced Test of Attention | DSM-4 criteria and Korean version of the K-SADS-PL-K | 72.8% |  | 84.8% | 45.7% | 77.9% | 57.1% |
| Fair quality (Zelnik, 201214)  230 subjects  (179 ADHD, 51 non-ADHD)   1. TOVA (Test of Variables of Attention) | Clinical diagnostic work-up included a family interview about the behavioral and neurodevelopmental history of the child, neurological evaluation and observation at the physician’s office, utilization of the DSM-IV diagnostic criteria, and employment of the Conners Rating Scales |  |  | 91.1% | 21.6% | 80.3% | 40.7% |
| Fair quality (Berger, 201015)  58 subjects  (45 ADHD, 13 non-ADHD)   1. Continuous performance functions tests (CPT) 2. TOVA 3. Conners CPT 4. TOVA + Conners CPT | A neurologic examination, the completion of DSM-based questionnaires by parents and teachers, and neuropsychologic evaluation confirmed the diagnosis | 94.8%  –  –  – |  | 100%  75%  52%  64% |  |  |  |
| **CPT and executive function studies** |  |  |  |  |  |  |  |
| Fair quality (Bloch, 201216)  34 subjects  (27 ADHD, 7 non-ADHD)   1. Cambridge Neuropsychological Testing Automated Battery 2. TOVA | Consensus achieved on a structured interview by a psychologist using DSM-IV based assessment and a clinical interview by child and adolescent psychiatrist |  |  | 57%-71%  63% | 7%-22%  85% | 94% | 37% |
| **Executive function studies** |  |  |  |  |  |  |  |
| Good quality (Klenberg, 201017)  Subgroups = sex & ADHD subtype  916 subjects  (215 ADHD, 701 non-ADHD)   1. Attention and Executive Function Rating Inventory | Diagnoses were based on structured interviews of parents and children and a parent rating scale (ADHD RS-IV: Home Version) and teacher reports from school | 91% (boys)  93% (girls) | 87%  subtype | 85% (boys)  83% (girls)  81% (subtype) | 84% (boys)  85% (girls)  76% (subtype) |  |  |
| **Biometric devices** |  |  |  |  |  |  |  |
| Fair quality (Caudal, 201118)  112 subjects  (52 ADHD, 60 non-ADHD)   1. Electro-interstitial scans | Children diagnosed with ADHD according to the DSM-IV and further examinations |  |  | 80% | 98% |  |  |
| **Observational assessment studies** |  |  |  |  |  |  |  |
| Fair quality (Ferrin, 201219)  Subgroup = age  1185 subjects  (1055 ADHD, 130 non-ADHD)   1. Neurological subtle signs | ADHD status was categorically defined by the semistructured clinical interview of their parent’s K–SADS–PL, and dimensionally by the Conners’ Global Index (CGI). The K-SADS-PL is a semi-structured diagnostic interview designed to assess current and past episodes of  psychopathology in children and adolescents according to DSM-IV criteria. | 84% | 90.3%  (<13 year)  77.9%  (≥13 year) |  |  |  |  |
| Poor quality (Carballo, 201420)  Subgroup = ADHD subtypes  523 subjects  (283 ADHD, 240 non-ADHD)   1. Strengths and Difficulties Questionnaire | Positive ADHD diagnosis based exclusively on the ADHD RS-IV which assesses DSM-IV-TR ADHD symptoms |  |  | 38.3% (ADHD)  84% (ADHD-C)  25% (ADHD-I)  77.8% (ADHD-HI) | 66.7% (ADHD)  60.0% (ADHD-C)  75.0% (ADHD-I)  66.7% (ADHD-HI) |  |  |

a See Methods section “Quality Assessment of Individual Studies” for definitions of quality assessment ratings.

Abbreviations: ADHD=attention deficit hyperactivity disorder; ADHD-C=ADHD combined type; ADHD-HI=ADHD hyperactive/impulsive type; ADHD-I=ADHD inattentive type; AUC=area under the curve; CPT=continuous performance test; EEG=electroencephalogram; IVA=integrated visual and auditory; MRI=magnetic resonance imaging; NPV= negative predictive value; PPV= positive predictive value; TOVA=test of variables of attention