can be orders of magnitude larger than the brain-generated electrical potentials and can distort the EEG data. Therefore, methods such as principal component analysis and independent component analysis have been proposed to remove these ocular artifacts [10,11]. In the case of specific single-channel EEG recordings, the use of a prior set of information on the wave frequencies could minimize contamination of the EEG data by ocular artifacts [12], and the best-known single-channel Mindwave Mobile EEG headset (NeuroSky Inc., USA) uses this method for their detection and elimination [7]. However, the

allowed to move outside the boundaries. They had to pay attention to the shape of the trail and the direction of their eye movements should follow the trail from the starting point to the end point. One familiarization trial was performed before the actual recording (one trial).

Corneal reflection (i.e., remote video-based) eye-tracking

the MABC bicycle/flower trial performance score (i.e., convergent validity); and (3) measures that assess unrelated characteristics, such as handgrip strength (i.e., discriminant validity). In addition, the known-groups validity was evaluated. A test with good known-groups validity should be able to distinguish individuals with a good attention level from those with a poor attention level. Therefore, comparisons of EEG-derived item attention and meditation indices were made between the DCD-attentive and DCD-inattentive groups, using the independent t test (objective 1).

To explore the influence of eye blink artifacts on the EEG-derived item attention and meditation indices in the DCD-attentive children (objective 2), the Kruskal-Wallis test was used to compare these outcome variables among the frequent-blinking (7–8 eye blinks/trial), moderate-blinking (5–6 eye blinks/trial), and rare-blinking (3–4 eye blinks/trial) groups. A non-parametric test was used because of the small sample size and because the data were not normally distributed. In addition, the Spearman rho was used to examine the bivariate relationship between the frequency of eye blinks and the EEG-derived item attention and meditation indices in the DCD-attentive group.

Results

A total of 37 children with DCD were eligible to participate in the study, 20 of whom were assigned to the DCD-attentive group and 17 were assigned to the DCD-inattentive group. All of them completed the assessments successfully. Detailed participant characteristics are presented in Table 1. The basic demographic characteristics were comparable between the two groups (all $p > 0.05$) (Table 1).

	DCD-attentive group (n = 20)	**DCD-inattentive group (n = 17)**	**p**
Age (years)	7.7 ± 1.0	7.2 ± 1.4	0.242
Sex (male/female) (n)	18/2	14/3	0.498
Weight (kg)	25.9 ± 4.2	26.1 ± 8.2	0.932
Height (cm)	125.3 ± 6.6	121.9 ± 7.1	0.152
Body mass index (kg/m2)	16.5 ± 1.5	17.2 ± 3.6	0.417
Physical activity level (MET hours per week)	17.6 ± 29.3	11.3 ± 16.9	0.437
DCD questionnaire 2007 total score	36.5 ± 8.7	39.9 ± 7.9	0.213
Movement Assessment Battery for Children total impairment score	16.2 ± 8.6	14.9±10.5	0.682

Table 1: Participant characteristics.

Values are mean ± standard deviations unless noted otherwise,

measure of the level of mental attention in children with DCD, with no significant influence of eye blinking. However, the validity of this device in measuring the meditation level is questionable. Our results were concordant with the findings of Rebolledo-Mendez et al. [13], who found a significant correlation between self-reported attention levels and the EEG-derived attention indices ($r = -0.391$, $p = 0.022$) and thus concluded that the NeuroSky EEG headset provides accurate readings for measures of attention in young people (i.e., concurrent validity). In fact, the raw EEG waveforms recorded by the NeuroSky headset were very similar to a traditional EEG recording system (Nuamps, Neuroscan, USA) in terms of the underlying frequency characteristics and the Fast Fourier Transform processing of raw EEG data, thus demonstrating good concurrent validity [6]. The comparative validity of the NeuroSky EEG recording system was also good – the headset-processed EEG band power data showed expected

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