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Acoustic Validation of the Analysis of Diadochokinesis in Normal Speech Using the Motor Speech Profile Program

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The purpose of this study is to evaluate the suitability, reliability, and concurrent validity of the analysis of diadochochinesis (DDK) in normal speech using a computer program, Diadochokinetic Rate Analysis (DRA) in the KayPENTAX Motor Speech Profile. Fifteen healthy participants were recorded at UW-Madison as they repeated various syllables as quickly and steadily as possible. The DDK samples were executed by the DRA protocol to generate immediate quantitative information at different thresholds and were also hand-measured. When the lowest peak intensity during consonant-vowel syllables is lower than the highest peak intensity during intersyllable pauses, the DRA output is incorrect and the DDK sample is defined as nonexecutable. Analyses were based on the percentage of nonexecutable DDK samples and the comparisons of the results between repeated analyses at different thresholds and between automatic and manual measuring methods. Results: (1) One-ninth of the DDK samples was nonexecutable; (2) when the protocol was executable, the reliability at different thresholds and validity between different measuring methods were both satisfactory; and (3) the temporal variation between different measuring methods were larger than the intensity variation. Implications of the findings will be discussed in terms of the application of the DRA to general clinical purposes.