MOTOR PERFORMANCE IN THE CONTEXT OF MENTAL-LINGUISTIC AND MEDICAL FINDINGS IN FIRST GRADERS

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Background Especially in childhood, motor and cognitive functions are thought to address similar brain areas and thus seem to be interrelated. Further a close link between brain function and the skeletal muscle system as well as the cardiovascular system is accepted. A correlation between the concentration and the coordinative performance is also being assumed in adolescents.

Methods The KOMPASS project (complex general school examination) investigates the motor performance (DMT 6–18), the movement behaviour (parents questionnaire) and the health status (school entrance examination) of first graders in the city of Chemnitz. 2,774 children (6.8±0.4 years, BMI 15.5 ±1.8 kg/m²) were tested and 2,035 parents were interviewed since 2010. The standard school entrance examination was conducted in 3,739 children. 1,901 parents gave their consent for merging the various data records.

Results The motor performance of the first graders in the test tasks: 20 meter sprint (Z-value 99.1±9.1), side jumps (Z-value 103.5±11.3), broad jump (Z-value 101.8±10.7), sit-ups (Z-value 99.4±8.9), stand and reach (Z-value 102.2±10.2) and 6 minute run (Z-value 101.6±10.3) was average. They achieved performances above average in the tasks balancing backwards (Z-value 106.2±11.6) and press-ups (Z-value 108.4±11.6). Within the school entrance examination speech disorders were diagnosed in 40.8%, deficits of visual perception in 26.0% and behavioural disorders in 16.7% of all children. Some kind of supportive interventions were received by 15.9% of all first graders. Those mental-linguistic findings showed a highly significant negative relationship with the motor performance (R=0.257; p<0.01) in the multiple regression analysis. A highly significant negative correlation was also found between the motor performance and the medical findings: decrease of visual acuity (24.0%), impairment of seeing stereo (3.5%) and deficits in fine or gross motor skills (35.7% and 23.8%)(R=0.380; p<0.01).

Discussion/Conclusions Various studies suggest a close relationship between brain function and physical performance. The results of the KOMPASS project confirm this nexus of cognitive function and physical performance in children without being able to prove a causal relationship.

REFERENCES