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REDUCED LEAN BODY MASS WITHIN SCHOOL CHILDREN WITH NORMAL BMI IS ASSOCIATED WITH LOW GROSS MOTOR PERFORMANCE

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Rationale

For health management school children's BMI is leading. Children with normal BMI (based on Cole criteria) are generally considered as healthy. Considering the epidemic of overweight in concurrence with sedentary behavior in children, low lean mass may be a limiting factor for gross motor performance.

Methods

In a pilot study (n=366) we measured lean mass of 6-12y old children with bioelectrical impedance analysis (Tanitan BC418). According to the Cole criteria children were underweight (n=23), normal weight (n=305) or overweight (n=38). The normal weight children were the focus of the present analysis.

Gross motor level was assessed with the Motor Scan, consisting of 4 test items (jumping-force, jumping-coordination, one-leg balance and ball skills) by calculating 'motor lead' in days (i.e. motor age minus current age).

For children within the normal weight group (n=305), lean mass (kg) was natural log transformed, adjusted for age and height for boys and girls seperately, and standard deviation score (sds) was calculated ('lean index').

Regression analysis was used to relate low lean index (<-1 sds) and delayed motor development (> 1y delay).

Results

Mean "motor lead" of normal weight children was -45 days (SD 465).

The lean index groups showed lower gross motor performance for lower lean index: A -610 (n=1); B -163 (515); C -38 (451); D +24 (450); E +273 (494) as shown in the **Figure** below.

Odds ratio for delayed motor development for normal weight children with a low lean index (n=45) was 2.48 (95% CI: 1.28; 4.82, p=0.007).

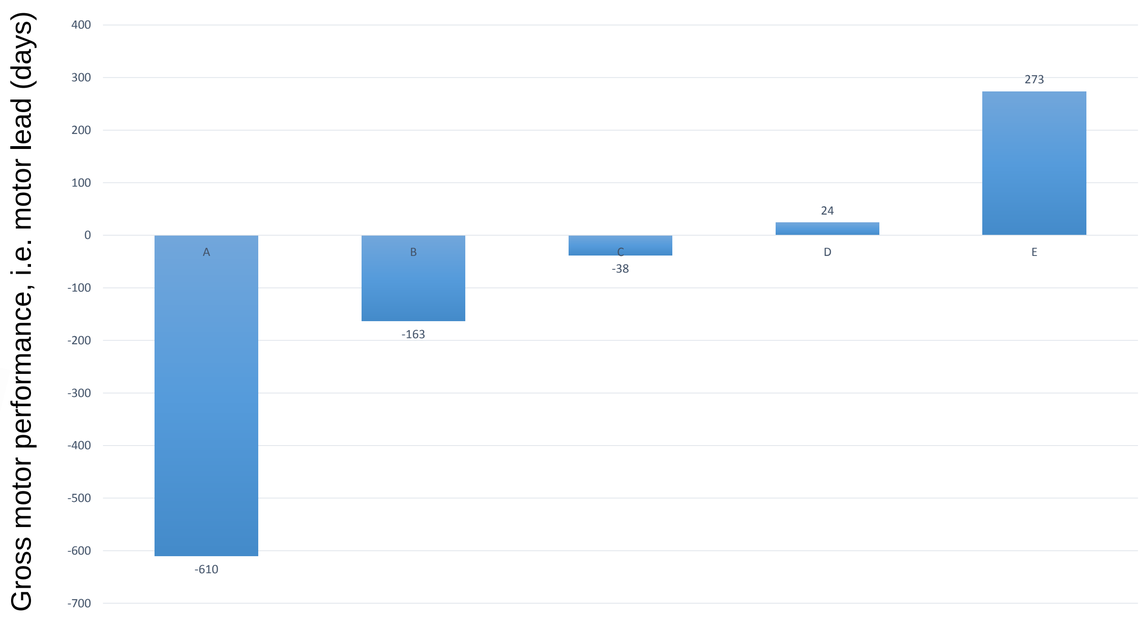

Figure: Mean gross motor performance (i.e. motor lead in days) per lean index group (A (n=1) <-2; B -2 upto -1; C -1 upto +1; D +1 upto +2; E > +2) within 305 school children with normal BMI

Conclusion

The generally held view that normal weight schoolchildren can be considered healthy, should be viewed with caution since the gross motor performance seems to relate in part to the age, sex, and height adjusted lean mass development of the child.

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