

## **Obesity and Strength Exercises in Children: Body Composition Influence**

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**Introduction:** Great levels of explosive dynamic strength (EDS) are needed to improve intermittent physical activity (PA) performance. Isometric strength (IS) has been associated with healthier metabolic and body composition profiles. Hence, interactions between strength performances and body composition would be explaining differences normal and overweight-obese boys (OB). The aim of this study was to compare EDS and IS between NB and OB.

**Methods:** Two-hundred and one boys were recruited ( $8.9\pm 0.8$  yrs; BMI  $19.9\pm 4.3$  kg.m<sup>-2</sup>; %FM  $22.4\pm 8.5\%$ ). Children were considered overweight or obese based on the body mass index (BMI) age-specific cut-off points; fat free mass (FFM) and fat mass percent (%FM) was estimated by anthropometry. To assess EDS, a Standing Broad Jump (SBJ), 30 meters speed race (S) and 10 x 5 meter Shuttle Run (SR) was used. IS was assessed with a handgrip dynamometer. PA behaviour was determined using questionnaires. Maturation was assessed by photographic models. Independent sample T-test was performed to compare absolute and relative strength test values. Interaction between body composition and EDS were analyzed.

**Results:** NB were better than OB on SBJ ( $126.1\pm 20.8$  vs  $117.7\pm 27.1$  cm;  $P<0.013$ ), S ( $6.6\pm 0.7$  vs  $6.9\pm 0.9$  m/s;  $P<0.005$ ), SR ( $19.7\pm 5.7$  vs  $21.7\pm 4.8$  m/s;  $P<0.013$ ). No significant differences were found on IS ( $15.1\pm 3.5$  vs  $15.8\pm 3.5$  N·kgFFM<sup>-1</sup>;  $P>0.195$ ). Significant interactions were found between FFM, waist circumference and EDS ( $P<0.05$ ).

**Conclusion:** As expected OB presented higher levels of IS and lower in EDS, however there were not differences in IS when values had been adjusted to FFM. On the other hand EDS differences must be explained by regional fat distribution and FFM.

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