Exploring strength and hypermobility in children: Interaction with movement proficiency

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In the exploration of issues impacting movement proficiency in children, an emerging factor that warrants consideration is hypermobility. While hypermobility may be advantageous in certain sporting contexts (e.g., gymnastics), for some children it may restrict their ability to perform movements at an age appropriate level. Previous research has reported a link between muscle weakness and joint hypermobility (JH), but has examined hypermobility, not movement proficiency as the dependent factor. The present study aimed to examine how muscle strength and hypermobility impact movement proficiency.

METHODS
Sixty four children (M age 7.91±1.5 yrs) participated. Movement proficiency was assessed via the Movement Assessment Battery for Children-2 (MABC-2). Hypermobility measures included the revised Beighton criteria and the Lower Limb Assessment score. Strength was assessed using 5-repetition maximum (5RM) tests, the Resistance Training Skills Battery for Children (RTSBC) and peak torque of the knee flexors and extensors were assessed isometrically and isokinetically using a Biodex dynamometer. 17% of children were classified as clinically hypermobile.

RESULTS
Sequential regression analysis was performed, with strength variables entered on the first step, and hypermobility on the second step. Movement proficiency was the criterion variable. On the first step, strength variables collectively explained 41% of the variance in movement proficiency (F(6,63) = 8.311, p < 0.01).

On the second step, hypermobility failed to explain significant variance in movement proficiency beyond that explained at step one (R squared change = 0.002, F change (1,56) = 0.158, p = 0.692).

CONCLUSIONS

- Results show that strength may be an important predictor for movement proficiency, whether hypermobility is present or not. Furthermore, the movement limitations associated with hypermobility may relate more to symptoms of JH syndromes.

- Future research might also consider the relationship between severity of JH and muscle strength, and its impact on movement proficiency.

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KEY REFERENCES: