



CORE STRENGTH  
FOR KIDS  
RESEARCH ROUNDUP

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## **Effects of Abdominal Stabilization Maneuvers on the Control of Spine Motion and Stability Against Sudden Trunk Perturbations**

[https://www.academia.edu/6868178/Effects\\_of\\_abdominal\\_stabilization\\_maneuvers\\_on\\_the\\_control\\_of\\_spine\\_motion\\_and\\_stability\\_against\\_sudden\\_trunk\\_perturbations](https://www.academia.edu/6868178/Effects_of_abdominal_stabilization_maneuvers_on_the_control_of_spine_motion_and_stability_against_sudden_trunk_perturbations)

This study looked at two different abdominal maneuvers (abdominal bracing and abdominal hollowing) and their effectiveness at controlling spinal movement and stability during rapid unpredictable movements. The study was conducted on adult male subjects and found that abdominal hollowing (drawing the navel upward and toward the spine) was not an effective means for providing trunk stability. Instead, abdominal bracing - described as isometrically tightening the abdominals without any change in the position of the muscles - was the more effective method for providing stability. Bracing was found to foster core muscle co-contraction, which increased trunk stability.

## **Contributions of Trunk Muscles to Anticipatory Postural Control in Children With and Without Developmental Coordination Disorder**

[http://krigolson.com/uploads/4/3/8/4/43848243/anticipatory\\_postural\\_control\\_paper\\_kane\\_barden\\_2012.pdf](http://krigolson.com/uploads/4/3/8/4/43848243/anticipatory_postural_control_paper_kane_barden_2012.pdf)

Evidence suggests that movement quality is impacted by postural adjustments made in advance of planned movement. The trunk plays a key role, by creating a stable foundation for limb movement. The purpose of this study was to examine anticipatory trunk muscle activity during functional tasks in children with and without developmental coordination disorder (DCD). The results indicated that anticipatory postural adjustments may be associated with movement problems in children with DCD, and that timing of both proximal and distal muscles should be considered when designing intervention programs for children with DCD.

## **Investigating the Associations between Core Strength, Postural Control and Fine Motor Performance in Children**

<https://ecommons.udayton.edu/cgi/viewcontent.cgi?>

[referer=https://www.google.com/&httpsredir=1&article=1041&context=dpt\\_fac\\_pub](https://www.google.com/&httpsredir=1&article=1041&context=dpt_fac_pub)

This study offers preliminary confirmation regarding the assumption that trunk control and postural stability are the foundation for the development of fine motor skills. The research presented here indicates significant relationships between some fine and gross motor skills, including low, but significant correlations between postural control and fine motor precision. Low, but significant correlations were found between: Core strength and integration (measured by the BOT-2 strength and integration subtests), integration and precision (measured by the BOT-2 integration and precision subtests), and precision and balance (measured by the BOT-2 precision and balance subtests).

## **Effects of Different Core Exercises on Respiratory Parameters and Abdominal Strength**

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4668176/pdf/jpts-27-3249.pdf>

This study was conducted on adult male subjects but has interesting findings that may relate to pediatric practice. The primary finding of the study is that focusing on muscular chain stretching and breathing techniques during core exercises can lead to improvement in respiratory function, core muscle endurance, and overall quality of functional movement. Visit the link to see descriptions of the exercises used in the study. Additionally, the study indicates that using vocalizations during core exercises can support proper breathing patterns and core muscle activation. The Functional Movement Screen was used to assess abdominal muscle fitness.

## **Effect of a Six-Week Core Conditioning as a Warm-Up Exercise in Physical Education Classes on Physical Fitness, Movement Capability, and Balance in School-Aged Children**

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7432415/pdf/ijerph-17-05517.pdf>

A six-week Dynamic Core Exercise program as a warm-up exercise significantly improved trunk muscular endurance, movement capability, flexibility, and balance in school-aged children. The DCE group performed a 10-min core exercise routine (described in detail in the article) twice per week for six consecutive weeks; the GPE group performed traditional physical education warm-up exercises regularly. The children were assessed by conducting the trunk muscular endurance test (i.e., dynamic curl-up, static curl-up, plank, and lateral plank), functional movement screen (FMS), and single-leg balance test before and after the intervention. At the end of the intervention, the DCE group demonstrated a significant effect on trunk muscular endurance, movement capability (i.e., FMS scores), flexibility, and balance.

## **The Effect of Two Therapeutic Interventions on Balance in Children with Spastic Cerebral Palsy: A Comparative Study**

<https://www.sciencedirect.com/science/article/pii/S1658361219300800>

72 children with spastic cerebral palsy were randomly assigned to 2 groups. Group A underwent a core stability program for 30 min and group B underwent whole-body vibration training for 10 min, at 3 times a week for 12 weeks for both groups. Balance was assessed using the Biodex Balance System. A significant improvement in all variables was observed in each group, with greater improvement of all stability indices in group B. Whole-body vibration and core stability exercises are recommended for the treatment of children with spastic cerebral palsy.

## **The Relationship of Core Strength with Static and Dynamic Balance in Children with Autism**

[https://www.researchgate.net/publication/319854038\\_The\\_Relationship\\_of\\_Core\\_Strength\\_with\\_Static\\_and\\_Dynamic\\_Balance\\_in\\_Children\\_with\\_Autism](https://www.researchgate.net/publication/319854038_The_Relationship_of_Core_Strength_with_Static_and_Dynamic_Balance_in_Children_with_Autism)

This study of a group of 32 boys with ASD states that core stability is a platform for effective biomechanical function of the extremities, increasing force generation and reducing joint loads in all activities. The results of this research suggest a significant relationship between dynamic balance and the core strength, while such a relationship was not found between static balance and the core strength.

## **Core Stability Exercise is as Effective as Task-Oriented Motor Training in Improving Motor Proficiency in Children with Developmental Coordination Disorder: A Randomized Controlled Pilot Study**

[http://ira.lib.polyu.edu.hk/bitstream/10397/35787/1/a0590-n07\\_manuscript\\_DCD\\_Clin\\_Rehab\\_7.pdf](http://ira.lib.polyu.edu.hk/bitstream/10397/35787/1/a0590-n07_manuscript_DCD_Clin_Rehab_7.pdf)

The results suggested that both a core stability program and a task-oriented motor program have similar effects on enhancing motor proficiency in children with developmental coordination disorder. In the core stability exercise group, exercises were performed in the supine, prone, sitting and standing positions. In the task-oriented training group, the focus was on training functional tasks, which included those that involved mainly body stability. See appendix for details of each program.