

## Pelvic Physical Therapy Distance Journal Club

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Comparison of trunk muscle function between women with and without diastasis recti abdominis at 1 year postpartum. Hills NF, Graham RP, McLean L. PT. 2018;98(10):891-901.

**Introduction:** The relationship between DRA (Diastasis Rectus Abdominis) and abdominal muscle function is not clear in the literature, especially at about 1 year postpartum. It is not clear that ongoing DRA at 1 year postpartum has an impact on function or physical impairments.

**Aim/Primary Aim:** (1) Investigate the impact of DRA on trunk muscle function at 1 year postpartum and (2) determine if the severity of the impairments related to the size of IRD (Inter-rectus distance).

**Study Design/Study Format:** prospective observational case-controlled study

### Methods:

- Included primiparous women 12-14 months postpartum. (exclusions on p.892 bottom right paragraph).
- Outcomes:
  - o RMQ – Roland Morris Disability Questionnaire for low back pain
  - o Numerical Rating scales for pain (0-100): abdomen, low back, upper-mid back, pelvis/hips
  - o ICIQ-VS (vaginal symptoms)
  - o ICIQ-FLUTS (urinary tract symptoms)
- Procedure:
  - o *Strength testing:* 3 reps each with dynamometer, 5 sec isometric hold; max peak recorded
    - Trunk flexion (position of testing?)
    - Trunk extension (position of testing?)
    - Trunk rotation torque – Right, left (sides averaged together for statistics)
  - o *Endurance testing:* time of hold in seconds in each position before sensors on body moved >2 SD away from the original position achieved
    - Trunk flexion
    - Trunk Extension
    - Side planks – right, left
    - Front Plank task
- *Sit up test:* 0-3 score with 3 attempts from supine to sitting, achieving a 40 deg angle from horizontal and hold 5 seconds.
- *Sitting-Rising Test:* no hands movement from standing -> sitting on floor -> standing. Points totaled max 10, deductions for any hands used or being unsteady. 3 attempts, best score kept. \*reliable and reproducible.
- *Ultrasound Imaging: (assessor blind to DRA status)*
  - o Locations: superior umbilicus, 3 cm above, 5 cm above
  - o Measured IRD at rest at end exhalation

**Results:** 40 participants total

- Women with DRA had significantly:
  - o Higher weight of the baby at birth
  - o Lower trunk rotation torque average
  - o Lower sit up test scores
- All other outcomes and tests were not significantly different between groups including back pain, urinary dysfunction and vaginal symptoms

### Discussion/Conclusion:

*Strengths:*

- related IRD/DRA to function (sit up and sit to stand to sit test).

- Used Real Time US imaging, a valid and reliable tool
- Looked at homogenous subjects at a consistent postpartum time point

*Weaknesses:*

- not all of the testing is reproducible in the clinic without specific equipment
- no assessment or observation of the DRA with activation (head lift, curl up)
- no assessment of the linea alba stiffness or tension generated during the tests/tasks

Authors explain why they think the participants had significantly lower scores on the sit up test with DRA but yet not a significant difference on the trunk flexion testing (p.897). They propose that in this study since the lumbopelvis is stabilized via strapping that therefore the trunk flexion is isolated; in the Sit up Test women relied more on achieving stabilization with not only the trunk flexors but also synergistic muscles through the range of motion from supine to the sit up position and the authors propose this was a more challenging task for women with DRA.

Women in this study overall had very mild DRA (just barely classified as having DRA at 2.5 cm vs 1.4 non-DRA). The results could vary with moderate or large DRAs. Authors recommend further testing of function tests with flexion + rotation and consideration of the biomechanical function of the linea alba and it's ability to transmit forces.

**Clinical Application:** Women presenting to the clinic at 1+ year postpartum with DRA complaints likely will have decreased trunk rotation torque and lower scores on the sit up test compared to women without DRA. Larger IRD was associated with lower scores on the tasks.

**Discussion questions:**

1. Does anyone regularly use the "sit up test" as described in this study?
  - a. If not, what test do you use that is comparable for outer abdominal/rectus abdominis muscle testing?
2. Why do you think the researchers in this study only measured IRD at rest?
  - a. Do you think resting IRD is important? Why or why not?