Immediate effects of lateral abdominal muscle exercise in different postural positions on the inter-recti distance in parous women


- Divarication of rectus abdominis (DRAM) is a thinning and widening of the linea alba, the central tendon of the abdominal muscles.
- Inter-recti distance (IRD) is the width of the linea alba.
- Pregnancy is the most common cause and for up to 40% of women the linea alba remains wide at a year postpartum.
- Long term consequences of living with a DRAM is reduced abdominal support to the back, pelvis and pelvic floor.
- Minimal evidence of the effect of abdominal exercises to reduce the IRD.

Aims of the study:

1. To investigate the effect of oblique abdominal exercises on the IRD.
2. To investigate the effect of lower abdominal hollowing exercise on the IRD in different postural positions.
Cross-sectional Study

- Convenience sample n=30 parous women
- ≥8 weeks postpartum (mean 22±19 months) who had a vaginal delivery (mean±SD age: 30±5 years).
- **IRD measurement**: 3 sites on linea alba, two ultrasound images taken at each site, and measured offline with Matlab software.
- 3 exercises tested – order randomised.
- All ultrasound images measured by lead researcher (reliability established in development phase).
Results

**Posture, Exercise and anatomical site effect:** Mean IRD +/-SD

**Site measured:** Pink=superior-umbilicus (SU), Green=Umbilicus (U), Blue=inferior-umbilicus (IU)

**Postures:** CL=Crook-lying, ST=Standing.

**Exercises:** LAH=Lower abdominal hollowing in crook-lying, LAHST=lower abdominal hollowing in standing, KnK=knee rolling
Conclusion

Knee-rolling: IRD during knee-rolling compared to lower abdominal hollowing in both postural positions was narrower (p≤0.02) at SU and U.

Lower abdominal hollowing: IRD during lower abdominal hollowing in crook-lying was wider (p≤0.01) at SU and IU compared to crook-lying at rest.

Research suggests the abdominal muscle effect on the IRD is anatomical site and exercise related.
Clinical Relevance

• This study showed that oblique abdominal exercises (KnR) reduce the IRD in the immediate term and could potentially be a suitable exercise for the treatment of DRAM.

• Lower abdominal hollowing in crook-lying widening of the IRD challenges the reasoning behind giving this exercise routinely.

Implications: Exercise selection:
• Rehabilitation based on the anatomy structure, function of the linea alba the central abdominal tendon and abdominal muscle fibre direction rather than just about the reducing the IRD.

• Longitudinal studies are needed before clinical recommendations are made.