

# Core Stability: evaluation of a therapeutic intervention in sitting and standing

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Ellis, C. Harraway (2007)

# Background

- Poor Core stability in athletes
  - less efficient movement and potential injury (Fredericson and Moore, 2005)
- Core stability training
  - prevents injury (Feaver, 2001)
  - enhance performance (Comerford, 2004)
  - accelerate post injury rehabilitation (Comerford, 2004)

# Background

- **Local stabilisers more efficient**
  - **Anatomy** (Bergmark, 1989: Richardson et al, 1999)
  - **Segmental stabilisation** (Richardson et al, 1999, Hodges and Moseley, 2003)
  - **Co-contraction** (Granata and Marras, 2000) (Kavcic, 2004)
- **Isolation of the local stabilisers comes from a neutral pelvis/ lumbar spine alignment**  
(O'Sullivan, 2002: Cholewicki, 1997) (O'Sullivan, 2006)
- **Rehabilitation – Isolate/ Dynamic mvt/ Function**

# Present research - Aim

- Investigate any change in bilateral SEMG activity of the trunk stabilisers between upright posture and post facilitation of an active neutral spine
  - Sitting
  - Standing
- No existing evidence of effectiveness

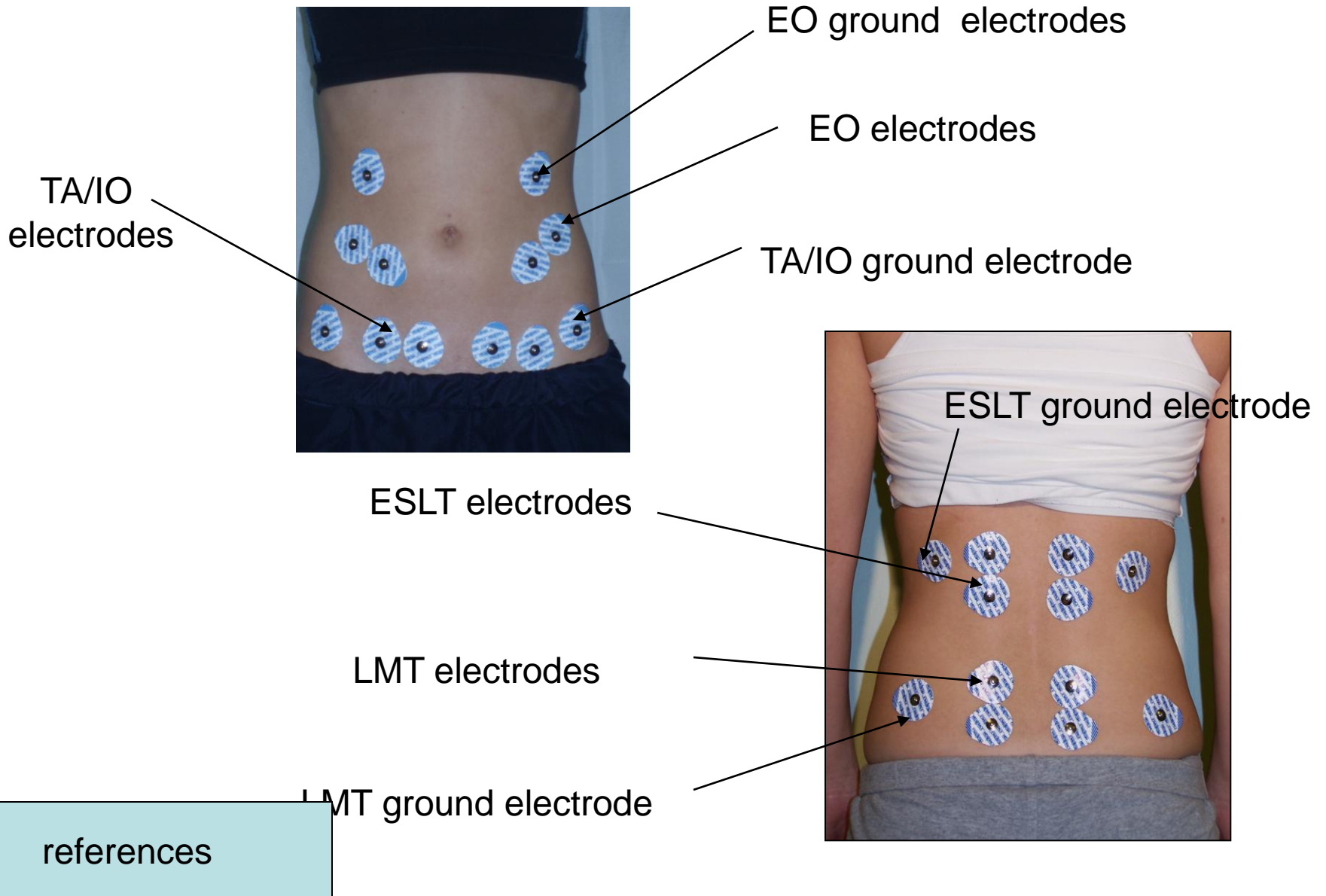
# Method

- Design
  - Same subject experimental design
- Sample (N=22) (females = 19)
  - Convenience sample
  - Healthy
  - Age group (mean 21.9 yrs)
- Local ethical approval gained/ Data Protection Act (1998)

# Method - measure

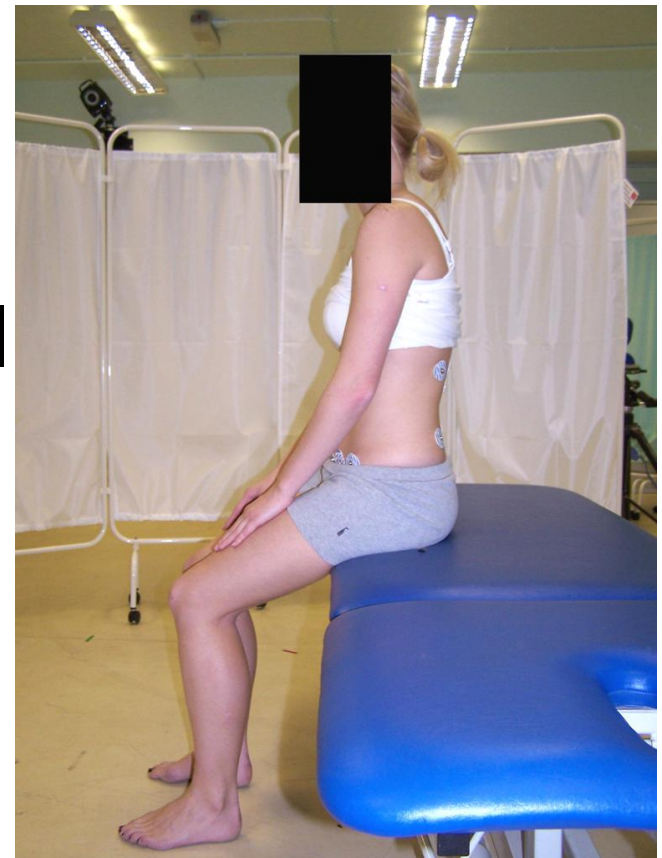
- Measurement tool – Surface EMG
  - Pre and post intervention
  - ESLT, EO, LMT, TA/IO
- SEMG bipolar configuration bilaterally.
  - skin prep (Turker, 1993)
  - electrode placement (Freriks, 1999)
- Same day standard protocol
  - Intra tester reliability for abdominals (Ng et al, 2003 - ICC = 0.75-0.89)
  - Reliability for back muscles (
  - MVC (Dankaerts et al, 2003 – ICC 0.91)

# Electrode placement



# Intervention

- Start position
  - Standardised
- Intervention
  - Pragmatic approach
- Evaluation of active neutral
  - Visual
  - Palpation





# PRE INTERVENTION



# INTERVENTION



# POST INTERVENTION



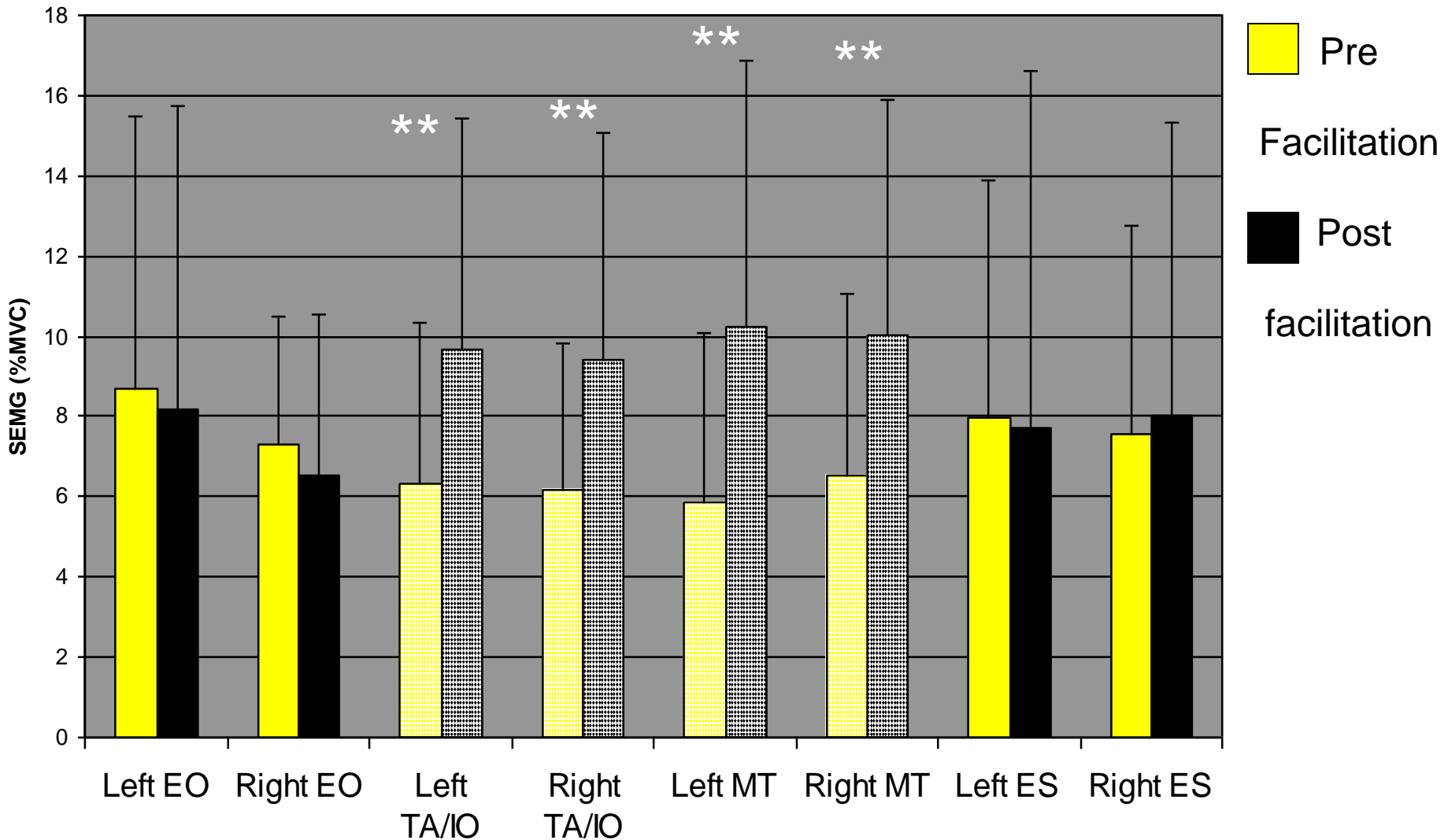


# Data processing/ analysis

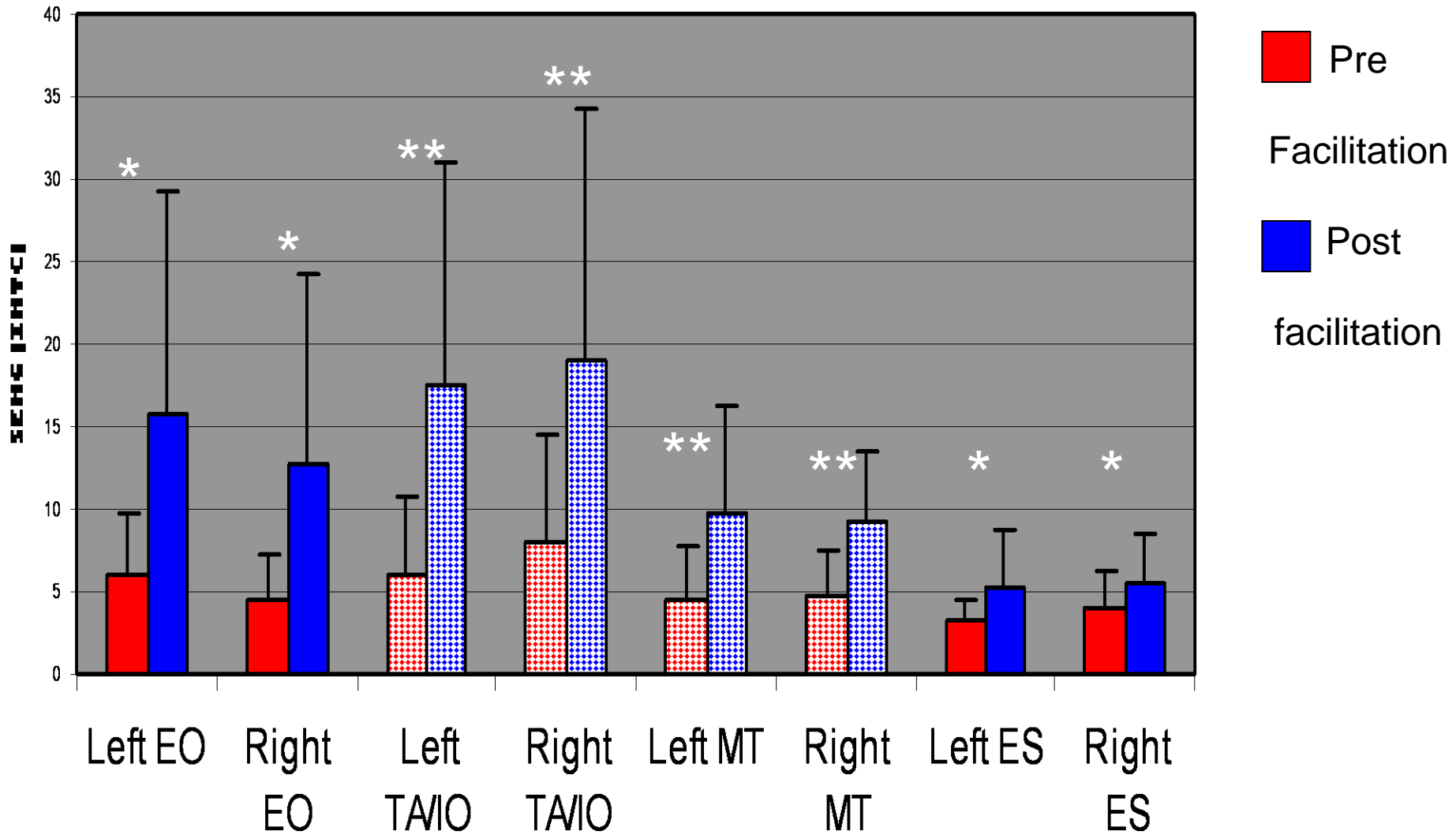
- Recorded over 3 seconds – RMS average requested
- Normalised against the MVC
- Repeated x 3 – mean calculated
- Data analysis
  - Repeated measure ANOVA (post hoc t test)  
( $p \leq 0.05$ )

# Results

# SEMG investigation of facilitation technique in sitting



# SEMG investigation of facilitation technique in standing





# Summary - Intervention

- Results
  - Statistically significant increase in all core stabilisers with preferential recruitment of local over global muscles
  - In sitting there was a change from global strategy (baseline) to local strategy
  - In standing enhanced local strategy

# Conclusions

- Facilitation is useful for the initial stages of training core stability ie. learning to isolate the local stabilisers



# Thank you for your attention

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