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Observation of Age-related Decline in the Performance of the Transverse Abdominis Muscle

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1 Observation of Age-related Decline in the Performance of the Transverse Abdominis Muscle

2 **Abstract**

3 Background

4 Previous research has shown that the performance of skeletal muscle declines with advancing age.
5 The transverse abdominis is a deep postural muscle in which coordination has previously been shown
6 to be reduced for low back pain sufferers. No previous research has studied the effect of age on the
7 activation on this muscle.

8 Objective

9 To assess the effect of age on transverse abdominis activation in response to rapid arm abduction

10 Design

11 Cross-sectional cohort study

12 Setting

13 University exercise physiology laboratory

14 Participants

15 18 adult males (age 27.0 yrs \pm 7.0) for the younger group and 11 older adults (5 males 6 females, age
16 59.6yrs \pm 4.0) were recruited for this study.

17 Method

18 Participants were positioned on a treatment table and performed a series of rapid arm abduction
19 movements with their right arm whilst the activation of the transverse abdominis was recorded using
20 ultrasound imaging. Onset of arm abduction was measured using surface electromyography and
21 synchronized with the ultrasound through the ultrasound unit's ECG channel. The mean time
22 difference between the two events was calculated during post-hoc analysis.

23 Main Outcome Measurements

24 A Mann-Whitney was performed to test for differences in the onset performance of the transverse
25 abdominis muscle between the two groups.

26 Results

27 The result showed that the older group were significantly slower than the younger group to engage
28 their TrA in response to the rapid arm abduction ($p = .036$). A separate analysis of the older group

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