

INTRODUCTION - Strength and core stability is instrumental for injury prevention, rehabilitation and maximising performance.[1] Physical screening of athletes is commonplace in many sports to identify areas of weakness, instability or poor neuromuscular control, but is not yet typically used in assessment of riders.[2] The Star Excursion Balance Test (SEBT) assesses the athletes' ability to perform a single leg task, challenging their neuromuscular control and their ability to maintain postural stability in a dynamic task.[3] We hypothesised that the dynamic control of riders would improve as a result of a structured six-month strength-training program.

METHOD - Eight junior elite riders of mixed riding disciplines were screened at time 0 (start), 3 months (during) and 6 months (end intervention). SEBTs were performed on the MAT™ (Movement Assessment Tool) in the anterior (fig. 1), posterior-medial (fig. 2) and posterior-lateral (fig. 3) directions. Intervention included low resistance strength and conditioning training combined with core stability and individualised exercises. All exercises were prescribed by a qualified Sports Therapist and Strength and Conditioning Coach. Wilcoxon tests (using SPSS 24.0) were used to detect differences in SEBT performance between screening intervals.

RESULTS - After 3 months and 6 months intervention respectively, significant differences were seen in the performance of the SEBT in the three directions posterior-medial (left leg: $p=0.066$, $p=0.674$; right leg: $p=0.015$, $p=0.025$), posterior-lateral (left leg: $p=0.015$; $p=0.025$; right leg: $p=0.028$, $p=0.484$) and anterior (left leg: $p=0.028$, $p=0.012$; right leg: $p=0.021$, $p=0.017$) (Graph 1 and 2).



Fig. 1



Fig. 2

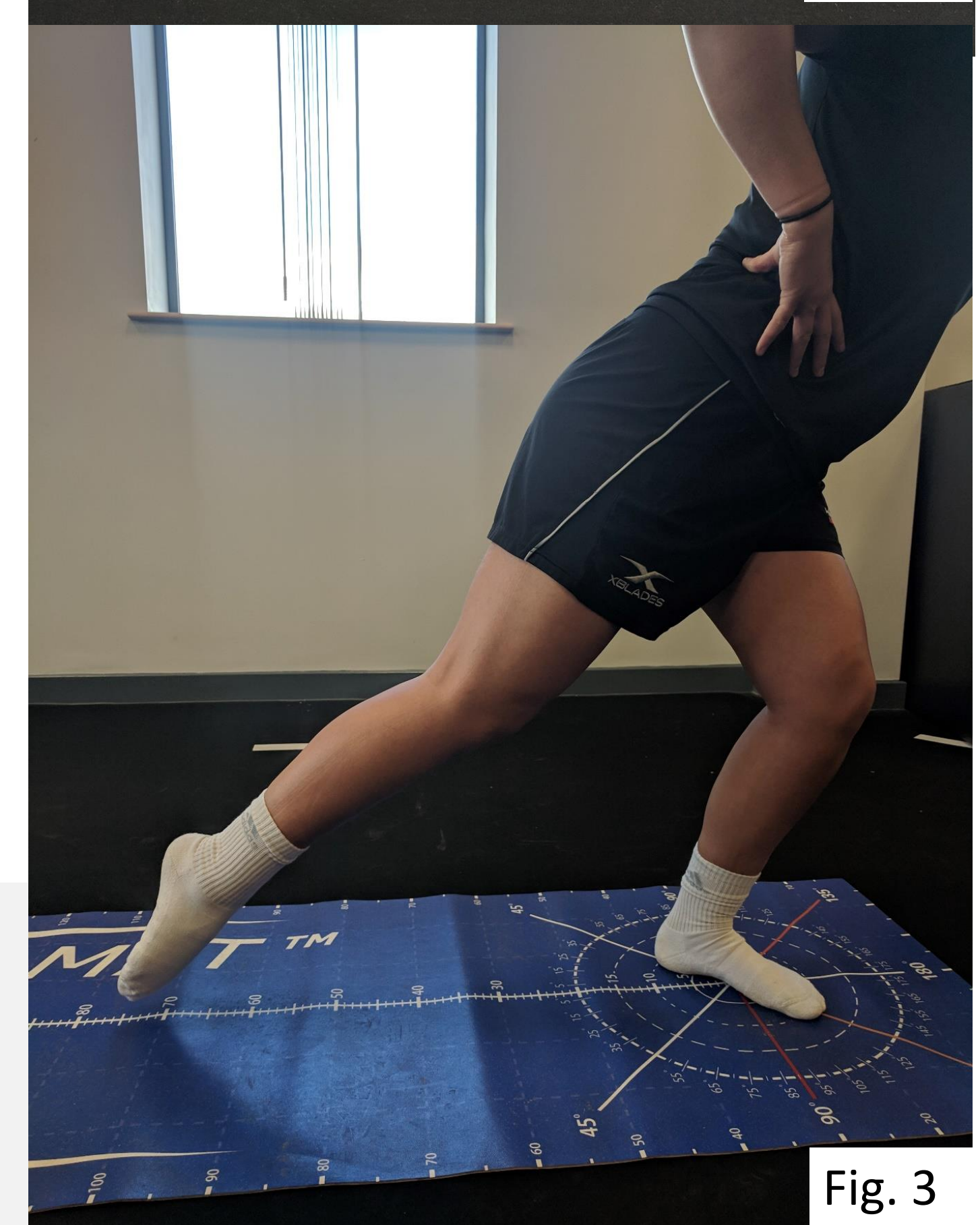
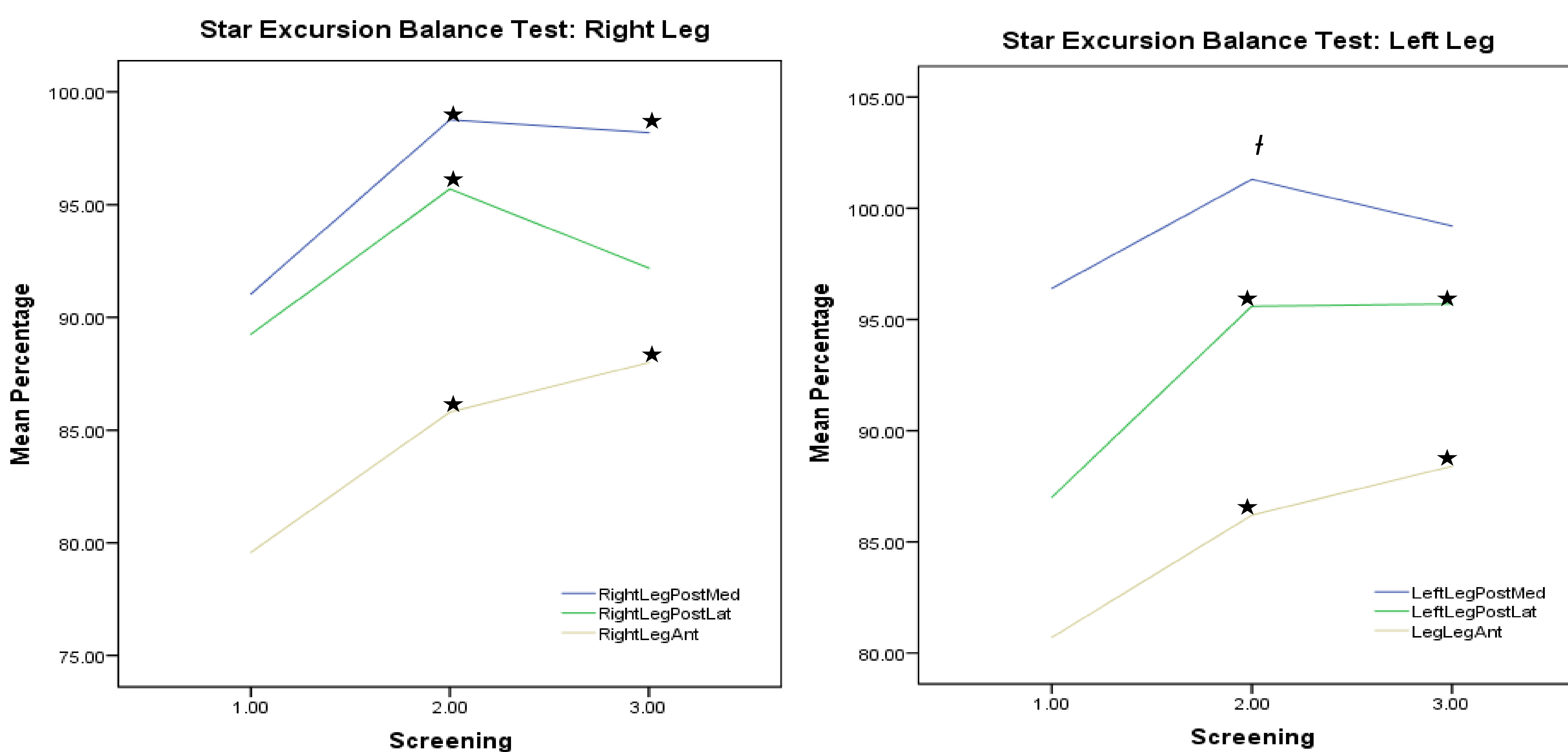


Fig. 3



Graph 1. mean percentages of right leg SEBT performance/ true leg length; Graph 2. mean percentages of left leg SEBT performance/ true leg length. ★, † Indicate significant difference between screening compared with screening 1 ($p<0.05$, $p<0.10$) respectively.

DISCUSSION – As proven in this study, the SEBT results improved after the 3- and 6-month strength-training program. This finding is supported by a study by Benis et al. (2016) and suggests better athletic performance and a lower risk for injury.[4,5] Balance, force absorption, neuromuscular control and coordination are measured by the SEBT and these physical capacities are believed to be rider-specific sport parameters.[2,4,6] This study also demonstrates that a successful strength programme does not have to rely on specialist equipment or facilities to conduct an exercise programme.

A limitation of this study is that no control group was included. Therefore, further study is recommended using a suitable control group.

To conclude, the SEBT seems to be an efficient and useful screening tool in the equestrian sport discipline. This study provides coaches and support staff with guidelines to screen and train their equestrian athletes with a view to reduce injury risk, improve athletic ability and ultimately improve performance.

KEY POINTS

- The SEBT is useful in assessing postural control in equine athletes.
- Regular strength and conditioning training improves postural control and equine performance.

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