



Football study –

Sling Exercise Training improves balance, kicking velocity and torso stabilization strength in elite soccer players.

Stray Pedersen J.I, Magnussen R, Kuffel E. Seiler S
Medicine & Science in Sport & Exercise 38(5):S243,
2006

12 Norwegian division one football players took part in the intervention group. The intervention group was training S-E-T twice a week for 8 weeks. 9 players at the same level served as control group. The players which trained S-E-T obtained a significant improvement in static balance and improved kicking velocity. No changes was observed in the control group. To our knowledge this is the first controlled trial quantifying the impact of a specific core stability training program on soccer kicking performance, a movement involving segmental summation of velocity. Only the abstract has so far been published.

Abstract

Purpose:

To determine the impact of a Sling Exercise Training (SET) core stability program on postural balance, kicking velocity, functional strength, and back pain in elite level soccer players.

Method:

12 Norwegian 1st division soccer players completed 8 wk x 2 d^{wk}⁻¹ SET training with a main focus on the hip and trunk area. Each training session, athletes performed 8 different highly unstable, closed kinetic chain exercises in adjustable slings. Exercise difficulty was progressed by increasing the resistance arm and degree of instability. 4 of the training group had suffered extended periods of low back pain. 9 players of similar performance level served as a control group.

Results:

- **Balance:** Mean one-legged eyes closed COP sway velocity moment decreased 45 % in the worst leg ($p < 0.01$) and 18% in the best leg ($p = 0.113$). The mean difference in velocity moment between the legs was reduced from 51% to 3% ($p=0.001$). No change in balance performance was observed in the control group.
- **Kicking:** Ball velocity during one-step maximal velocity kicking (preferred leg) increased significantly in the training group (3.5%,) compared to controls (-2.3 %, $p = 0,04$).
- **Torso functional strength:** The 4 subjects with chronic low back all reported that pain was reduced after training. The training group, and particularly chronic low back pain subjects, significantly improved in a clinical test of pelvic rotational stability ($p < 0.01$).

Conclusion:

This unique functional stability training program involving movements performed in unstable slings clearly improved static balance and reduced low back pain. In addition, a small but significant improvement in kicking performance was observed. To our knowledge this is the first study to demonstrate a direct performance enhancing effect of a core stability training program. Functional strength training in slings appears to be an effective modality for enhancing neuromuscular control and joint stability.