

**Title:** The Effects of Two Single Leg Stance Balance Interventions on the Measure of Static Balance: A Pilot Study

**Purpose/Hypothesis:** Physical Therapists often employ interventions that attempt to improve balance. Interventions commonly used in the outpatient orthopedic setting may include such activities as single leg stance(SLS) on the floor, on a rocker or wobble board, on dyna-discs, or while using the Bodyblade. The purpose of this study was to identify the effect of two SLS interventions that are commonly used in many physical therapy clinical settings. This study compared single leg standing with eyes open(EO) and eyes closed(EC) and single leg standing with use of the Bodyblade with EO and EC. The effect of these interventions on static balance was measured using the single leg stance test(SLST) with EO and EC.

**Number of Subjects:** Forty-six subjects consented to participate in the study and 43 completed the study(32 females, 11 males). Three subjects voluntarily withdrew from the study. Mean(SD) age of subjects was 29.6(10.7)years, body mass 69.5(15.2)kg, and height 166.7(8.1)cm. All subjects had no previous history of balance/vestibular problems, were not pregnant, and had no recent lower extremity injury 6 months prior to participation. The study was approved by the Rosalind Franklin University Institutional Review Board.

**Materials/Methods:** Participants performed a pre-test to determine maximum duration of SLST with EO and EC. The order of testing with EO or EC was randomized. Subjects performed 3 trials under each condition. The results were recorded in seconds. After pre-testing, the participants were randomly placed into one of three groups: Single leg stance (SLS n=14), Bodyblade (BB n=13), or control (n=16). The SLS and BB groups were instructed on their specific balance intervention. The participants in each group correctly demonstrated their appropriate intervention and were given written instructions along with an exercise log. Participants performed their specific balance intervention 3 times per week for 6 weeks. The control group performed no intervention. After 6 weeks, all subjects were post-tested in the exact same procedure as the pre-testing.

**Results:** There were no significant differences noted between the SLS, BB, and control groups after pre-testing. From pre-test to post-test the BB group demonstrated significantly improved performance on SLST with EC( $P=.02$ ). No other groups had a significant change from pre to post-test. In addition, there was a significant change between groups after 6 weeks of balance intervention. The BB group increased their duration of SLS time on the post-test with EC significantly more than the SLS and control group ( $P=.01$ ).

**Conclusions:** After 6 weeks of balance training, individuals in the BB group demonstrated significantly improved static balance with EC when compared to the SLS training group and a control group.

**Clinical Relevance:** The use of the Bodyblade with SLS when performed as a static balance intervention may increase duration and improve static balance more than using single leg standing without the Bodyblade as an intervention. This is especially true under the condition of EC.