**Lower Extremity Alignment and Proprioception in Females with Anterior Pelvic Tilt/**Noha Khaled Shoukry Mohammed: Cairo University, Faculty of Physical Therapy. Department of Biomechanics. Supervisors: Prof. Dr. Salam Mohamed Elhafez, Dr. Ahmed Salama Yamany, and Dr. Abeer Farag Hanafy Hassan. Thesis: M.Sc.; Biomechanics, 2017.

**Abstract**

**Background:** Pelvic alignment is recognized as the cornerstone of overall skeletal alignment. Yet, there is lack of knowledge that supports the functional chain effect of different pelvic alignment on the lower extremities. **Purpose:** The purpose of the study was to compare the lower limb's static alignment (anteversion angle, quadriceps angle, navicular drop) and weight bearing joint position sense (active reposition error) bilaterally and among groups with different pelvic alignment. **Methods:** Seventy-five females with different pelvic alignment in the sagittal plane participated in the study with mean (± SD) age 19.59 ± 0.49 years, height 1.62 ± 0.65 m, and body mass 63.65 ± 10.45 kg. They were assigned into three groups; group (1) with anterior pelvic tilt, group (2) with anterior innominate rotation and group (3) control. Data were collected using Standard and Digital Goniometer, and Straight-Edge Ruler. **Findings:** Mixed design MANOVA revealed that the anteversion angle and the quadriceps angle were significantly higher (p<0.05) in females with anterior pelvic tilt and anterior innominate rotation compared with the control group but there was a non-significant difference in the navicular drop and the active reposition error between groups (p>0.05). There was no significant difference in the lower limb's static alignment between the two tested sides in the control group in contrast to anterior pelvic tilt and anterior innominate rotation groups. However, the active reposition error were significantly lower (p<0.05) in the dominant side compared with the non-dominant side of the control group, with no significant difference (p>0.05) in-between the two tested sides in the other two groups. **Interpretation:** Alteration in the sagittal plane pelvic alignment is a predictor for changes in proximal lower extremity alignment. Bilateral lower extremity symmetry should not always be assumed in adult females.

**Keywords:** Pelvic alignment, Lower Limb Static Alignment, Proprioception, Functional chain, Bilateral Asymmetry.