

**ELECTRONIC GUIDE TO THESES APPROVED BY
DEPARTMENT OF BIOMECHANICS
PREPARED BY NERVEEN ABD EL SALAM ABD EL KADER AHMED**

Department of Biomechanics

Master Degree
2017

Author	:	Noha Khaled Shoukry Mohammed
Title	:	Lower Extremity Alignment and Proprioception in Females with Anterior Pelvic Tilt
Dept.	:	Department of Biomechanics.
Supervisors	1.	Prof. Dr. Salam Mohammed Elhafez
	2.	Dr. Ahmed Salama Yamny
	3.	Dr. Abeer Farag Hanafy
Degree	:	Master.
Year	:	2017.
Abstract	:	
<p>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 with mean \pm SD age 19.59 ± 0.49 years, height 1.62 ± 0.65 m, and body mass 63.65 ± 10.45 kg participated in the study. 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.</p>		
Key words	1.	Pelvic alignment.
	2.	Lower limb static alignment.
	3.	Proprioception.
	4.	Functional chain.
Classification number	:	000.000.
Pagination	:	p.
Arabic Title Page	:	الميل الأمامي وضعياً واستقبال الحس العميق للطرف السفلي في الإناث ذات للحوض.
Library register number	:	5359-5360.

**ELECTRONIC GUIDE TO THESES APPROVED BY
DEPARTMENT OF BIOMECHANICS
PREPARED BY NERVEEN ABD EL SALAM ABD EL KADER AHMED**

Author	:	Omar Ahmed Yousif Alosily
Title	:	Effect of Localized Muscle Fatigue on Postural Control in Healthy Adults
Dept.	:	Department of Biomechanics.
Supervisors	1.	Dr. Nagui Sobhi Nassif,
	2.	Dr. Amal Abd ElRahman ElBorady
	3.	Dr. Hamada Ahmed Hamada
Degree	:	Master.
Year	:	2017.
Abstract	:	
<p>Background: Localized muscle fatigue is a factor that appears to impair postural control. A number of studies reported an increase in postural sway with localized muscle fatigue. Yet, there is lack of knowledge that supports the effect of different muscle group fatigue on postural control. Purpose: The purpose of the study was to determine the effect of muscle fatigue on postural control and whether the effects of localized muscle fatigue on postural control differ among three muscle groups (ankle plantar flexors, knee extensors, and back extensors). Methods: Thirty-three males participated in the study with mean \pm SD age of 20.9 ± 1.6 years, height 176 ± 7.5 cm, body mass 75.8 ± 9 kg, and body mass index 24.4 ± 2.3 kg/m². Biodex Isokinetic Dynamometer was used to induce fatigue of three muscle groups(ankle plantar flexors, knee extensors, and back extensors).The muscle to be fatigued was randomly chosen by each participant by picking up a paper from 3 folded papers. Participants performed a concentric-eccentric contraction of the examined muscle group at 30°/sec angular velocity. Biodex Balance System was used to assess postural control (overall stability index, antero-posterior stability index, and medio-lateral stability index) during double limb stance and single limb stance (alternatively for the right and left limb) before and after the induction of fatigue. The fatigue was induced on the participant's dominant limb for ankle and knee muscles. Findings: Repeated measures MANOVA revealed that there were a significant increase ($p < 0.05$) in the overall, AP and ML stability indices in the post-fatigue compared to the pre-fatigue condition at bilateral standing and unilateral standing for the three muscle groups. Additionally, there were higher significant increase ($p < 0.05$) in all dependent variables at the back extensors compared to ankle planter flexors and knee extensors. As well as, there were higher significant increase ($p < 0.05$) in all dependent variables at the ankle planter flexors compared to knee extensors. Conclusion: Localized muscle fatigue of the back extensors had the most substantial effects on postural control, followed by ankle plantar flexors. In contrast, localized muscle fatigue of the knee extensors had the lowest apparent effect.</p>		
Key words	1.	chronic low back pain
	2.	Postural control
	3.	Biodex balance system
	4.	Muscle Fatigue
	5.	Healthy Adults
	6.	Adults
	7.	Localized Muscle Fatigue
Classification number	:	000.000.
Pagination	:	121 p.
Arabic Title Page	:	تأثير الاجهاد العضلى الموضعى على التحكم فى قوام البالغين الاصحاء.
Library register number	:	5511-5512.