The effects of female sex hormones (birth control contraceptive) on measures of endothelial function

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Int J Exerc Sci 2(1): S25, 2009. Endothelial function has been shown to be influenced by many variables, including, but not limited to body composition, disease state, dietary fat intake, medication, and sex hormones, in particular estrogen. Specifically in women, changes in the functioning level of endothelial cells vary in response to changes in estrogen levels in the body. Purpose: The purpose of this study was to investigate the effects of hormonal birth control contraceptives on endothelial function, or more specifically, on flow-mediated dilatation (FMD). Method: 61 female participants between the ages of 18 and 28 (21.54 ± 2.03) with BMI ranging from 17.47 to 35.03 (23.04 ± 3.37) were recruited for this study from Texas Christian University by word of mouth and flier. Upon enrollment into the study, participants completed a medical questionnaire and signed a University approved informed consent. Based on self-report, the group was divided into those using birth control contraceptives (BC, n = 31) and those not using contraceptives (NC, n = 30). Endothelial function was assessed via FMD of the brachial artery using an Acuson, Aspin Advance color Doppler ultrasound unit with a L10 linear array transducer. Briefly, with the subjects in a supine position, the diameter of the brachial artery was measured in longitudinal section image using the caliper system in the Acuson ultrasound unit. The brachial artery was then occluded for 5 min with a blood pressure cuff inflated to 50 mmHg above systolic blood pressure. For 5 min following the occlusion, an image of the blood vessel diameter was obtained every 30 sec. Results: The average pre-occlusion and peak FMD responses for the groups were 0.295 ± 0.034 and 0.351 ± 0.034 cm, and 0.308 ± 0.039 and 0.373 ± 0.044 cm for the BC and NC groups, respectively. This corresponded to an average FMD percent change of 19.27 ± 9.27 and 21.52 ± 7.02 for the BC and NC groups, respectively. No significant difference was found between the two groups for either absolute or percent change responses. Conclusion: Birth control medications do not influence endothelial function assessed via flow-mediated dilatation.