



Lipid Accumulation Product (LAP) and Waist Circumference to Height Ratio (WHtR) Associated with Free Androgen Index but not with serum Testosterone and Androstendione in Women with PCOS

Kuliczowska-Plaksej J¹, Milewicz A¹, Laczanski L¹, Jedrzejuk D¹, Lwow F², Bolanowski M¹

1 Department of Endocrinology, Diabetology and Isotope Therapy, Wrocław Medical University, Poland

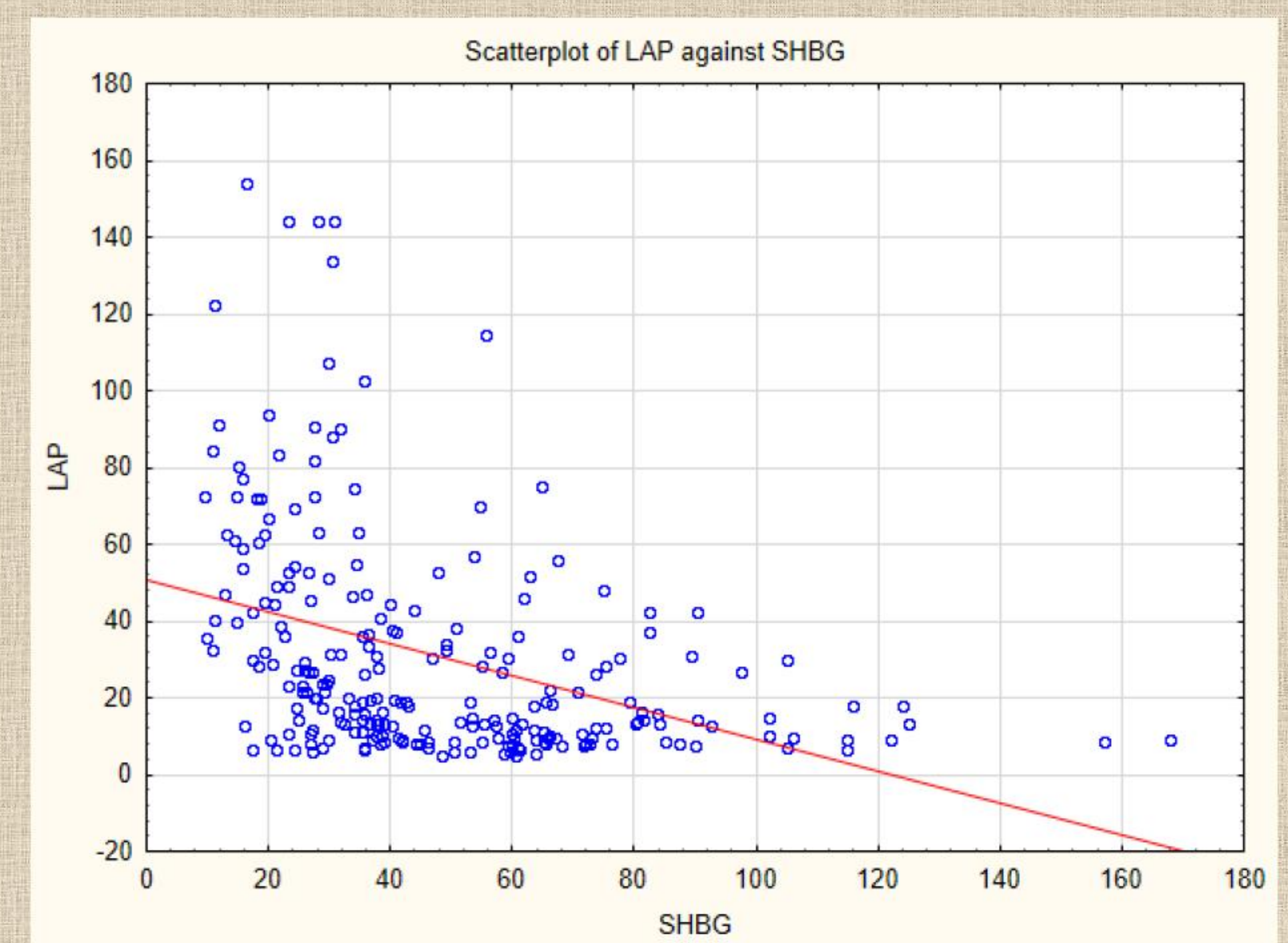
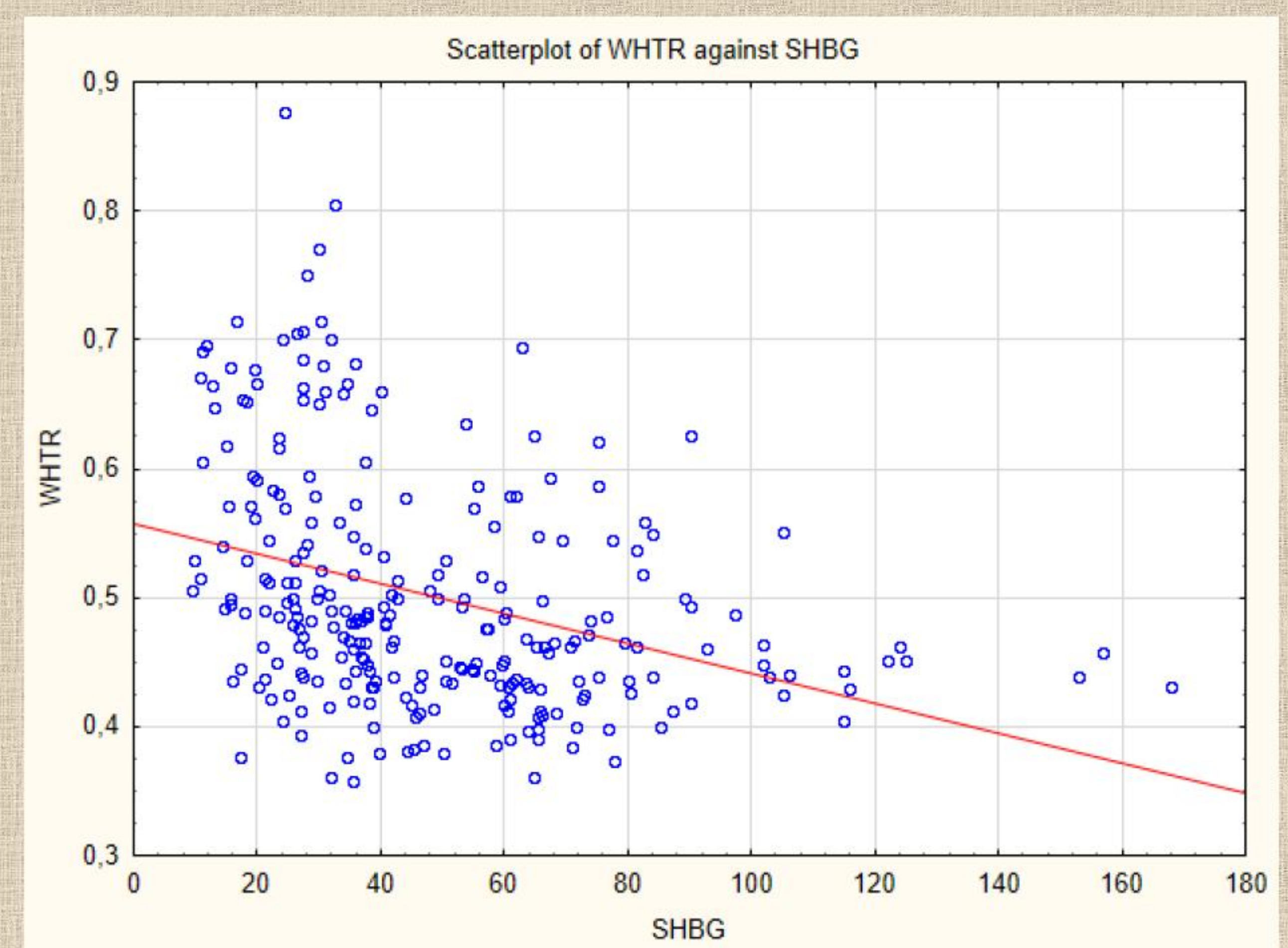
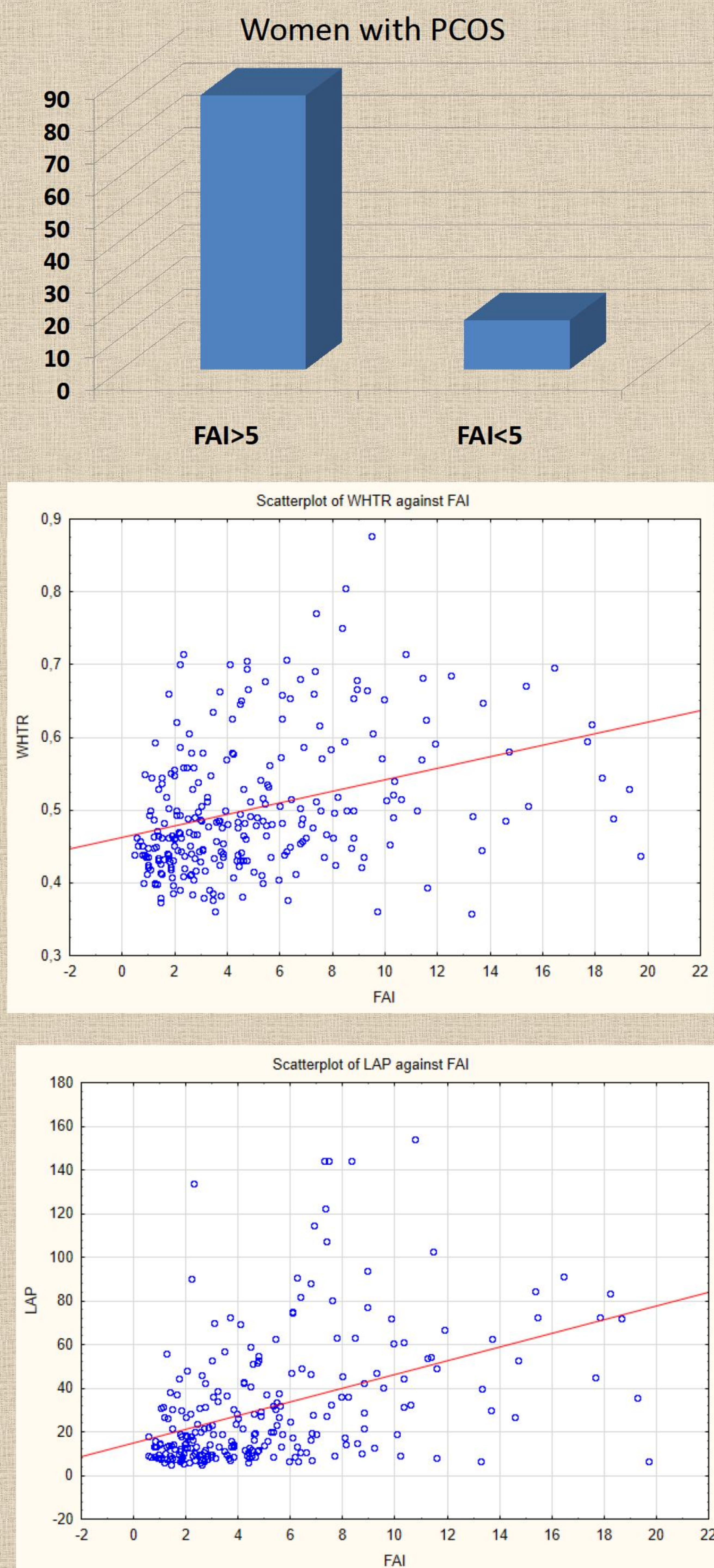
2 Department of Health Promotion, Faculty of Physiotherapy, University School of Physical Education, Wrocław, Poland

INTRODUCTION: Polycystic ovary syndrome (PCOS) is associated with metabolic disorders such as insulin resistance, hyperinsulinemia, dyslipidemia and central obesity which increase the risk of cardiovascular diseases (CVD). Lipid accumulation product (LAP) and waist circumference to height ratio (WHtR) are novel CVD risk predictors based on the assessment of waist circumference, height and serum triglycerides.

AIM OF THE STUDY: The aim of our study was to evaluate the LAP and WHtR associations with hyperandrogenemia in women with PCOS.

MATERIAL AND METHODS: The study group consists of 161 women with PCOS diagnosed according to the Rotterdam criteria aged 24.7 ± 4.9. We measured serum testosterone, androstendione, sex hormone binding globulin (SHBG), lipid profile by commercial kits. Free Androgen Index (FAI) was calculated by standard formula. LAP cut-off value was 34.5, and for WHtR was 0.5. Study group was divided into two subgroups according to FAI value ≥ 5.0 and separately into three subgroups according to serum testosterone and androstendione concentrations.

RESULTS: Women with PCOS and FAI over 5.0 had significantly higher LAP values than women with FAI below 5 (84.75% vs. 15.25% respectively, $p < 0.005$), OR = 5.787, which suggests that FAI value > 5 is associated with 5-fold increased risk of high LAP values. Similarly, PCOS women with FAI > 5 had higher WHtR, which suggests that increased FAI value is associated with higher WHtR (OR – 3.55, $p < 0.005$). Such associations were not observed in case of subgroups divided according to androstendione and testosterone concentrations - WHtR and LAP were comparable. LAP and WHtR were significantly negatively correlated with SHBG concentration and positively with FAI values, but not with serum testosterone and androstendione levels.



CONCLUSION:

Hyperandrogenemia expressed as $FAI \geq 5.0$ is associated with significantly higher values of novel CVD risk predictors – LAP and WHtR in women with PCOS. Serum SHBG level as well as FAI value are good predictors of CVD risk in women with PCOS.