C77 | MODERATE INTENSITY TREADMILL EXERCISE INFLUENCES THE IMMUNE SYSTEM AND PROSTATE SIGNALOME IN A RAT MODEL OF PROSTATE CANCER

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Introduction: Prostate cancer (PCa) is among the most prevalent cancers worldwide. This work aimed to evaluate the role of moderate intensity exercise training in a rat model of PCa chemically and hormonally-induced.

Material & Methods: Fifty-five male Wistar rats were divided into: control sedentary (SED+CONT; n=10), control exercised (EX+CONT; n=10), induced sedentary (SED+PCa; n=15), and induced exercised (EX+PCa; n=20). Exercised animals were trained in a treadmill, for 53 weeks. PCa induction consisted of flutamide and *N*-methyl-*N*-nitrosourea administration, followed by testosterone propionate implants. At sacrifice, prostate was collected for histopathological, immunohistochemical and antibody microarray analysis. Peripheral blood was collected for biochemical and immunophenotyping analysis. Data were analysed using SPSS 25 and values were statistically significant at $p<0.05$.

Results: Body weight was lower in exercised groups than in sedentary ones, either in control and in PCa groups ($p<0.05$). C-reactive protein and tumor necrosis factor-like weak inducer of apoptosis (TWEAK) levels were not different among groups. No macroscopic lesions were observed in prostate gland. Peripheral levels of γδ T cells were higher in exercised groups ($p<0.05$). Exercise training also induced Oestrogen Receptor (ESR1) upregulation and Mitogen-activated Protein Kinase 13 (MAPK13) downregulation, changed the content of the phosphorylated (at Ser-104) form of this receptor (coded by the gene ESR1) and seemed to increase ERα phosphorylation and activity.

Conclusions: Prostate lesions were similar to those identified by histology in men. Lifelong exercise did not influence the development of PCa lesions. However, our results reinforce the beneficial role of exercise in anti-tumour immune response, with modulation of endocrine resistance, PI3K-AKT, FOXO and MAPK pathways by exercise during prostate carcinogenesis.

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