**Exercise Immunology: Prescriptions for Health**

**ABSTRACT FORM**

**Session theme number – 6**

This is my abstract title – it is limited to 30 words

**γδ T cell responses to prolonged heavy endurance exercise**

KAKANIS M1,3, GRAY B1, PEAKE J1,2, SIMMONDS M1, BRENU E4, MARSHALL-GRADISNIK S4

1. Faculty of Health Sciences and Medicine, Bond University, Queensland, Australia
2. School of Biomedical Sciences, Queensland University of Technology, Queensland, Australia
3. Centre of Excellence for Applied Sport Science Research, Queensland Academy of Sport, Queensland, Australia
4. School of Medical Sciences, Griffith University, Queensland, Australia

**ABSTRACT**

The focus of this study was to assess exercise-induced alterations in circulating γδ T cell subpopulations and memory phenotypes after a prolonged heavy-intensity exercise bout. Ten highly-trained endurance cyclists (mean ± SEM: age 24.0 ± 1.3 years; height 1.81 ± 0.02 m; body mass 73.3 ± 1.8 kg; peak oxygen uptake 60.7 ± 1.5 mL.kg⁻¹.min⁻¹) performed 2 h of cycling exercise at 90% of the second ventilatory threshold. Blood samples were collected before exercise, immediately post-exercise, 1 h, 2 h, 4 h, and 6 h post-exercise. Flow cytometry was used to examine γδ T cell subsets, memory phenotypes and receptor expression. A significant decrease in cell concentration was observed in total γδ T cells and the δ² subset from pre-exercise to 1 h, 2 h, and 4 h post-exercise. Further analysis of the δ² subset revealed a significant decrease from pre-exercise to 1 h, 2 h, and 4 h post-exercise in naive δ² cells, and a significant decrease from pre-exercise to 1 h and 2 h post-exercise in central memory δ² cells. A significant decrease was observed in γδ T cells expressing CD11a high, CD62L high and CD94+ from pre-exercise to 1 h post-exercise in CD62L low and CD94- γδ T cells. These results suggest an exercise-stress-induced redistribution of γδ T cells from the circulation with greater propensity for antigen stimulation, tissue and lymph node homing potential for a duration of 4 h after the cessation of exercise.