**Shortterm changes**

**Single exercise session: Immune activation and improved immune effector functions**

**IMMUNE CELL PERIPHERAL BLOOD**

- Transient increased circulating immune cells dominated by cells with an activated phenotype

**SOLUBLE MEDIATORS PERIPHERAL BLOOD**

- Pro- and anti-inflammatory cytokine levels e.g. IL-6, IL-8, IL-10, IL-1ra
- IgM levels

**IMMUNE CELL PERIPHERAL BLOOD**

- Increased levels of circulating immune cells return to normal

**FUNCTIONAL CHANGES PERIPHERAL BLOOD IMMUNE CELLS**

- Increased phagocytic capacity of phagocytes
- Increased production of reactive oxygen species by neutrophils and monocytes

**SOLUBLE MEDIATORS PERIPHERAL BLOOD**

- Pro-inflammatory cytokines e.g. IL-6, TNF-α, IL-1β
- Anti-inflammatory cytokines e.g. IL-10, TGF-β

**MUCOSA**

- IgA levels

**FUNCTIONAL CHANGES PERIPHERAL BLOOD IMMUNE CELLS**

- Reduced production of pro-inflammatory cytokines (e.g. IL-6, TNF-α, IL-1β)
- Reduced disease incidence, viral infection susceptibility

**Post-exercise: Immunological tolerance and reduced immune effector functions**

**IMMUNE CELL PERIPHERAL BLOOD**

- Reduced levels of circulating immune cells with an activated phenotype (e.g. increased levels Tregs, CD14⁺CD16⁻ monocytes)

**FUNCTIONAL CHANGES PERIPHERAL BLOOD IMMUNE CELLS**

- Lower production of cytokines upon stimulation with ligands

**Longterm changes**

**Moderate regular aerobic exercise: Immune dampening and improved immune effector functions**

**IMMUNE CELL PERIPHERAL BLOOD**

- Reduced levels of circulating immune cells with an activated phenotype

**FUNCTIONAL CHANGES PERIPHERAL BLOOD IMMUNE CELLS**

- Reduced production of pro-inflammatory cytokines (e.g. IL-6, TNF-α, IL-1β)
- Reduced disease incidence, viral infection susceptibility