Webinar: Maintaining Immune Health in the Face of COVID-19 and Future Viruses

Presentation Slides: Janet Lord, FMedSci
Taking the Fight to Coronavirus: Exercise and Nutrition

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The Aged Body and COVID-19

Inflammaging

Human Nasal cells

Ace2 expression

Contrl IL4 IL17A IFNγ IFNα2

Modified from Sungnak W et al (2020)

% Killing

Young Old

P = <0.0001


Source: Immunotherapy © 2013 Future Medicine Ltd
Skeletal Muscle – A key immune regulator

- Muscle releases Myokines
  - IL6, IL7, IL15, MNRTIL

- Macrophages
  - ↑IL10
  - ↑IL-RA
  - ↓TNF

- NK cells
  - ↑Killing Virus infected cells
  - ↑Cell numbers

- Fat
  - ↓inflammatory macrophages
  - ↓Adipokines

Graphs showing:
- CRP (mg/L) vs Physical Activity Status (Sedentary, Moderate, Trained)
- TNF (pg/ml) vs Steps per day (Young, Old, Cyclists)
- Specific lysis (%)
  - Cell, Serum, Pre, Post, 1h post
Recovery after COVID-19

- COVID-19 patients experience extreme fatigue, meaning they exercise less.
- Patients can be bed bound for several weeks, losing muscle as a result (1kg of muscle can be lost per week of bed rest).
- Regular exercise, especially resistance exercise, is important to regain muscle and help immune function.

Foster MA et al (2020) JCEM
Nutrition and Immunity

- The gut microbiome (bacteria) has a major influence on the immune system, including inflammation.
  - Antibiotics often given to Covid19 patients destroy the gut bacteria.
  - Eating a diet high in fruit and vegetables helps to have a healthy gut.

- Vitamin D enhances immune function, and also is important for muscle health.

- Zinc has been shown to reduce infections.

- 4 weeks on a diet low in carbohydrates (the paleo diet) has been shown to reduce inflammation (Gyorkos et al, 2019)