INNOSpace Network Space2Health

Presentation delivered under agenda item 16 „Space and Global Health“ of the Scientific and Technical Subcommittee

Space2Health

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Research institutes

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Project Management Agency

> 10,000 Employees

57 Institutes and facilities

30 Sites in Germany

Aviation  Space  Energy  Transport  Security  Digitalisation
Innovation through cooperation

**Initiative INNOspace®** (HighTech-Strategy of the Federal Govt)

- Cross-sector conferences and workshops
- INNOSpace Masters innovation competition
- INNOSpaceEXPO ALL.TÄGLICH!
- BMWK initiative „Raumfahrt bewegt!“

**Intersectoral networks**
for knowledge exchange and for initiating innovation projects

- **Space2Motion** – since March 2018
- **Space2Agriculture** – since March 2019
- **Space2Health** – since September 2020
INNOspace Network Space2Health

Cooperation potential between Space and Health

Since 2\textsuperscript{nd} of September 2020
Opportunities and challenges for the health sector in the 21st century

- Digitalisation
- Artificial Intelligence
- Demographic change
- Anthropogenic climate change
- Robotics
- Urbanisation
Space2Health - Topics

Prevention and health care

Medical care - technology and processes

Digitalisation, AI and data security

Certification, validation, qualification and testing
> 90 Space2Health - Network partners
The importance of technology and knowledge transfer based on a Space2Health project

Adaptation for terrestrial use

Adapting and developing technology for use in healthcare
So that research into active substances in weightlessness prevents diseases

- Research under microgravity conditions in the Columbus module of the ISS is helping to understand protein crystallisation, which has been linked to devastating neurodegenerative diseases such as Alzheimer's and Parkinson's disease.

- Such experiments were conducted during Alexander Gerst's missions on the ISS, among others.

- Transfer of the application to the terrestrial health sector:
  - Development of new active substances
  - Treatment of neurodegenerative diseases such as Alzheimer's and Parkinson's disease.
To keep muscles strong

- **Myotones** is the first to monitor the basic properties of the muscles with a non-invasive, wearable device.

- Transfer of the application to the terrestrial health sector:
  - Therapy against muscle and bone atrophy
  - Training success monitoring for competitive sport and rehabilitation
Keeping bodies healthy on Earth and in space

- Biochemical and psychological analyses in order to investigate the microgravity and stress-induced weakening of astronauts' immune systems and develop effective countermeasures.

- Transfer of the application to the terrestrial health sector:
  - Understanding the connection between stress, brain and immune system
    - Stress-related diseases
    - Therapeutic approaches
Thank you for your attention