Longest Spaceflight by a Woman: Christina Koch

Why in News

The **National Aeronautics and Space Administration (NASA)** astronaut **Christina Koch** landed on the Earth on 6th february, 2020 after a **record stay of 328 days on the** International Space Station.

- **Single Spaceflight**
  - The previous **longest single spaceflight** by any **woman** was 289 days by **Peggy Whitson,** also an American, who set that record in 2017.
  - **Valery Polyakov of Russia** holds the **combine (i.e. for both men and women)** record for the longest single spaceflight in history (438 days).
- **Cumulative Record**
  - **Gennady Padalka at 879 days is the world record holder in terms of cumulative time in space** across one or more spaceflights.
  - **Whitson at 665 days** holds the world record for **women.**
- **Significance**
  - One particular research project Koch participated in is the **'vertebral strength investigation'**, which better defines the extent of spaceflight-induced bone and muscle degradation of the spine, and the associated risk for broken vertebrae.
  - This is expected to provide insight into the development of **future countermeasures, such as preventative medicine or exercise.**
  - These results also could provide recommendations for limiting the amount of **force astronauts are subjected to during launch.**

Challenges of Human Spaceflight

- **Gravity Field:** Transitioning from one gravity field to another is tricky. It affects **hand-eye and head-eye coordination.** NASA has learned that without gravity working on the human body,

bones lose minerals. Even after one returns from a space mission, one could be at greater **risk of osteoporosis-related fractures.**

- **Isolation:** No matter how well trained one is, behavioural issues are likely to crop up. Due to isolation, an astronaut may encounter **depression, fatigue, sleep disorder and psychiatric disorders.** This may lead to performance decrements, adverse health outcomes, and compromised mission objectives.
- **Radiation**: In space stations, astronauts receive **over ten times the radiation than what people are subjected to on Earth.** Radiation exposure may increase the risk of **cancer.** It can damage the **central nervous system.** Radiation can also cause **nausea, vomiting, anorexia, and fatigue.**
- **Hostile Environment:** Rockets are extreme machines. These needs to have habitability factors including temperature, pressure, lighting, noise, and quantity of space. It's essential that astronauts get the **requisite food, sleep and exercise needed to stay healthy and happy.**
- **Distance from Earth:** An astronaut over a spaceflight may face a **communication delay** with its team on the Earth. Also, there is a possibility of **equipment failures or a medical emergency.**

Source: IE