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Voyage to Become Ideal Space Traveller: An Insight into Space Physiotherapy - A Review

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Abstract

The astronauts' physiological alterations in microgravity are comparable to those of deconditioned athletes or elderly bedridden patients. This has given rise to a need of physiotherapists for pre and post flight rehabilitation for astronauts, but the awareness about it is miniscule and there is lack of baseline knowledge. This study thus aims at shedding light on how physiotherapists work in space organisations and their role from pre-flight to post-flight rehabilitation. Google scholar, Pub med, Elsevier, Hindawi and Sciencedirect databases for articles illustrating different Space physiotherapy interventions were extracted and 15 full texts were selected to review. It was found that Microgravity and space travel have profound consequences on a variety of bodily systems .In order to replicate the consequences,space organisations utilise a model called prolonged bed rest, a cause for an increased risk of cervical and lumbar intervertebral disc (IVD) herniations in astronauts. The antero-lateral abdomen and paraspinal muscles' size, capacity for voluntary contraction, and response to retraining were all evaluated using ultrasound imaging. The Advanced Resistive Activity Device, AlterG Anti-Gravity Treadmill,ATLAS – Advanced Twin Lifting and Aerobic System,HERO – High Eccentric Resistive Overload, HULK – Hybrid Ultimate Lifting Kit, M-MED – Multi-Mode Exercise Device, NGRED – Next Generation Resistive Exercise Device are new age devices in Space centres . Assisting with pre-flight stress relaxation, treating in-flight symptoms, and advanced exercise schedule for the duration of the space station stay are the fundamental tasks of physiotherapy. To conclude, space physiotherapy is an emerging yet promising specialization which requires a multi-structural approach and individualized treatment plan. Further deep exploration is still required to validate its efficacy. This study will make aware physios at large about new career opportunities for those seeking to work in space.

Keywords: *Space physiotherapy, pre-flight, post-flight, Outer space.*