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STABILOGRAPHY PARAMETERS AFTER HIP FLEXION AND EXTENSION TRAINING DURING SIMULATED SPACE MISSIONS ISOLATION

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Space human factor studies have been conducted for the last 70 years and brought us a wide knowledge about human psycho-physiology in isolation and confinement. Since space sojourns are time, crew and space limited, big part of the studies use terrestrial habitats and simulated space missions. The lack of microgravity conditions allows to determine which aspects of human body and mind response are determined specifically by the lack of gravity. Habitat studies allow also to verify technology readiness for space missions implementation in terms of logistics and ergonomics.

The use of stabilography in isolation studies shows how the habitat specific conditions influence human motor system. The psycho-physiological stress causes regeneration impairment and muscle function changes. Most of analog astronauts experience some symptoms of increased stress such as headache, digestive system disorders, nervousness, insomnia and tiredness. The symptoms connected with motor system are less obvious and harder to determine without specialized equipment or specific training regime.

Since measuring procedures are possible to implement in daily routine, the data obtained from the mission provides information about daily stabilography parameters changes. Training routine pilot study was conducted during analog space missions in LunAres habitat in Piła. Two opposite exercises were implemented into training routine on two different missions. One crew was performing hip flexion resistance training and the second crew was training with the hip extension exercise. There were six analog astronauts in each crew with the 1:1 proportion of each sex. The results show an opposite tendency in body mass distribution during stabilography examination after both exercises. It provides a proof that in both exercises, targeted muscle groups were stimulated properly. Differences are not statistically significant but still present a promising direction for wider studies.