# **Elastic EMS Workout**

Bone and muscle loss is a huge issue in The International Space Station and also during normal space flight due to no gravity, the astronauts lose 2% of their bone mass and 7% of their muscle mass EVERY MONTH. This is a huge shackle that limits humanity and stops our evolution and progress in the exploration of space. Think of it simplified if an astronaut loses 7% of his muscles every month that means that in 8 moths he would have lost MORE THAN 50% of his muscle mass. Luckily most astronauts don't spend that much time on the station and are recalled to be rehabilitated. This means that constantly one astronaut has to leave and another one has to come and take the time to learn what the last one has discovered and then continue to make a discovery of his own. Which wastes a lot of time and MONEY?!

## Why is this happening?

In order to find the solution, we need to find the cause. The cause is right under our feet, it's gravity. Every day we have to use our muscles to against gravity in actions from our morning weight lifting workout to something so simple as walking. However, in space there is no gravity, and we don't use our muscles nearly as much as we use them on earth, so the body decides "Hmm why should I keep sending nutrients to something I don't use that much anymore" and our muscle and bone mass starts to decrease.

## The solution:

We need to find a way for astronauts to extensively use their muscles WITHOUT GRAVITY. A tough one... But we have an answer! Now NASA has tried using a treadmill to force muscle activity, but however that doesn't hit every muscle and there is still loss of muscle mass. Just like in a normal gym to exercise every muscle you need a lot of big machines. Right? WRONG! Our Gym Tube takes almost as much space as that treadmill but in it you can work on every muscle separately.

## What is it?

Because there is no force pulling the astronauts down we need to create it, and to do so we will use elastic bands. In our so-called Space Tube, we have strategically placed hooks so that the astronaut can make different connections in them which will create different exercises to target different muscles or muscle groups. Furthermore (as you can see in the presentation) we have created 3 different add-ons to the tube which will help astronauts isolate the chosen muscle. There are so many creative ways to connect the bands and create exercises that we can write a full book about it. For example, connecting the bottom two hooks and putting the band over the astronaut will let him do pushups, sit-ups, back muscle exercises and much more, and this is only using one connection (on the presentation you can see other exercises targeting different muscles). Is one band not enough to provide a difficult challenge? No problem you can double or triple the connection to make a harder exercise.