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Jožef Stefan International Postgraduate School
and Young Researchers' Day CMBO

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Ankle Exoskeleton with a Quasi-Passive Clutch

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Poster number: 30



Passive exoskeletons?

- Active



Iron man (of course)



HAL (Japan)

Using:

- Big motors
- Big batteries

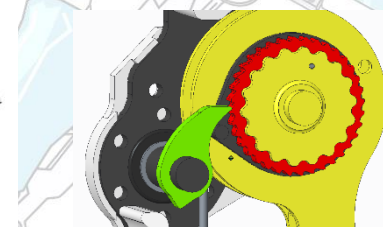
Heavy & expensive



- Passive, quasi-passive



XPED passive exoskeleton



Using:

- Elastic springs, brakes
- Small motors



How does it work?



- Calf muscles -> clutch
- Achilles tendon -> spring

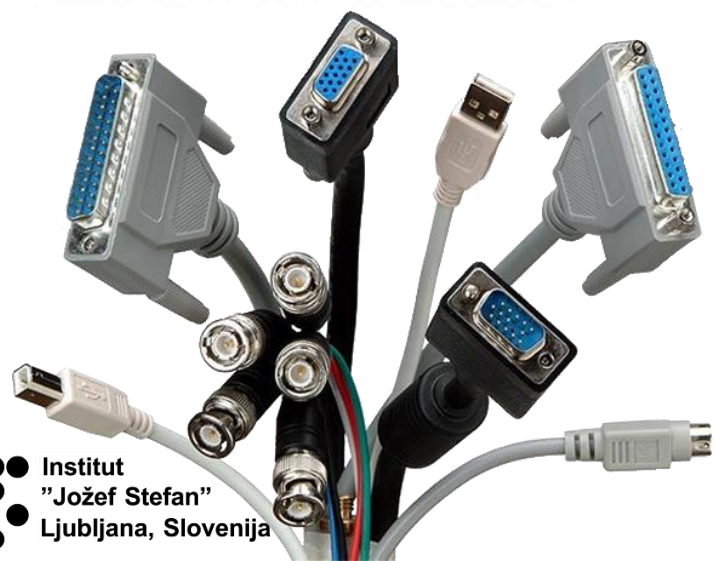




Measuring the effort?

- Muscle activity
- Oxygen consumption
- Heartrate
- Kinematics
- Forces/torques

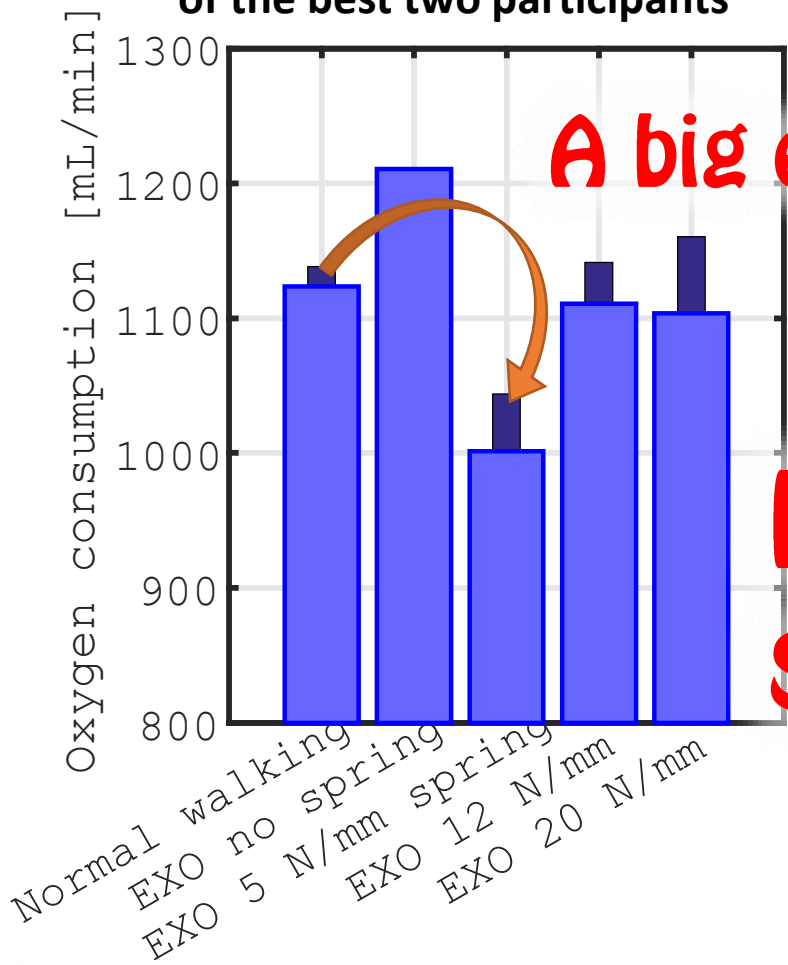
Lots of cables





Results

Oxygen consumption,
of the best two participants



A big effort reduction

**It pays to have a
spring in your step**

