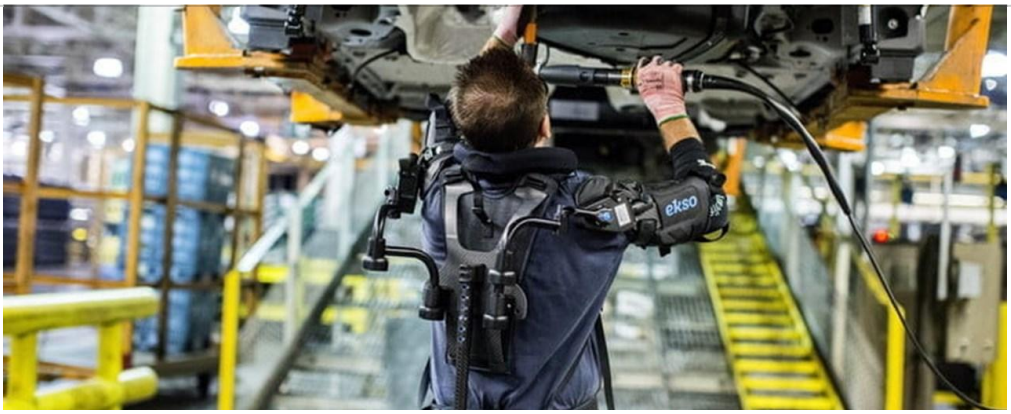

Can an exoskeleton really help me? Five lessons you need to know

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Let's say you're running a small company in the manufacturing or construction industries. Perhaps your employees are exposed to heavy work: day-after-day they handle materials, they carry tools, or they work with their back bent or their arms elevated. They get fatigued, which may limit their productivity, and some workers may even get injured, leading to long-term back pain or neck and shoulder pain. An exoskeleton could help overcome these issues. Worn on the body, it takes over some of the heavy work, reducing the mechanical loads on the human body.

Now, before running to the store to buy one, you need to know this:

Lesson 1: An exoskeleton is not the first solution to consider

First, you should look into other ergonomic measures that reduce or even eliminate the heavy work: workstation re-design, the use of cranes, balancers or other aids, mechanization or robotization.

If these are not feasible from an operational, technical or financial point of view, only then should you consider the use of exoskeletons.

Lesson 2: An exoskeleton may be effective *(or not)*

Passive exoskeletons (that are spring-based and commercially available) are effective in reducing loads on the human body. However, this conclusion is mainly based on research on isolated activities performed in the lab. In practice, work is seldom an isolated activity, but a variety of activities. Whether an exoskeleton will reduce the workload or not, depends on the activity profile over time in your specific work situation.

Lesson 3: Before testing, define the potential of exoskeleton use

Before bringing an exoskeleton to your workplace, you must have an idea of the specific activities that need support in your work situation and might get that support from an exoskeleton. It's also equally important to have an idea of the activities that wouldn't be supported or may even be hindered by wearing an exoskeleton. This requires a solid task analysis. It takes some effort but will prevent set-back and disappointment, once the exoskeletons have been purchased.

Lesson 4: Involve workers in testing and implementation

Perhaps an obvious one, but too important to leave out: involve your workers in testing, implementation, and decision-making. Your workers are the exoskeleton wearers and will only accept this new technology if the positive, load-reducing effects outweigh any hindrances that the exoskeleton may bring. The experiences of workers are crucial for further use and acceptance.

Lesson 5: Earn the costs back

The prices vary, but let's say an arm-support exoskeleton costs €4000 with some additional costs for training, consultancy, and decision-making. How can you earn this money back? Suppose one of your employees is often on sick leave due to shoulder complaints. As soon as the exoskeleton reduces sick leave by two weeks, costs are earned back by savings on replacement costs. Alternatively, productivity may increase due to reduced fatigue - a 5% increase may generally earn the investment back in about 3

years. It’s not guaranteed that this will happen, of course, so you should also consider more qualitative aspects: less fatigue and discomfort in your workforce, more satisfied and motivated worker and higher job attractiveness.

Do you want to know more? Get in touch with the EXSKALLERATE team!

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