

EXOSKELETON FOR DISABLED PEOPLE

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The statistics testifies that hundreds of thousands Belarusians have the problems with the musculoskeletal system, and the result of these diseases often is a heavy disability. Continually there is a situation when it appears impossible to make even some steps. Disabled people are compelled to move on bulky and uncomfortable wheelchairs, which can't pass everywhere. But undoubtedly all of them want to stand on feet again and to start walking and running like ordinary people. Therefore various companies try to do everything possible to help disabled people. And thanks to new technologies they have a chance to return to active life.

Exoskeleton is the device which is intended to increase power and mobility of the human using external frame. Initially, the main direction of the development was the military application of exoskeletons. The purpose is the creation of armor which combines in itself fire power and booking of the tank, mobility and speed of the person, and many times increasing strength of the one who uses an exoskeleton.

The first exoskeleton was in common developed by General Electric and United States military in the 60th, and was called Hardiman. (Fig. 1)

In the beginning of the 70th the developments of exoskeleton began in medical aims. The main idea is the help to people with problems of the musculoskeletal system. For the first time in the history disabled people, all life carrying out in a wheelchair, will have an opportunity to rise to the utmost and to look into eyes of the interlocutor at one level.

At the moment it is possible to pick out the following models of exoskeletons:

- Ekso Bionics
 - ReWalk
- full HAL suit
 - Indego
- ExoAtlet (Fig. 2)

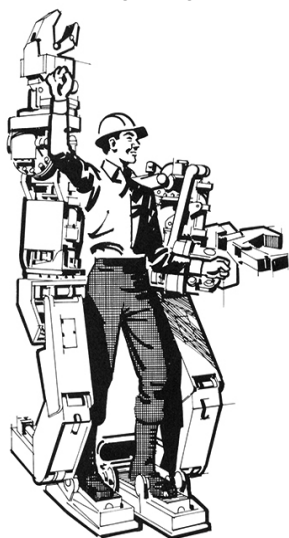


Fig.1

The development is conducted in the USA, Japan and Russia. Also the companies gradually deliver production to Europe.

So, what about Belarus? Now more than 97 thousand people are registered needing technical devices of social rehabilitation.

The republican unitary enterprise "Belarusian Prosthetic and Orthopedic Recovery Center" is the only concern for rendering the prosthetic and orthopedic help to the population and production in the republic more than 70% of names of the products included in the state registry, allocated to disabled people free or on favorable terms.



Fig.2

The main problem of realization of exoskeletons (and not only in Belarus) is their inaccessibility in the financial plan. The price varies from 30 to 130 thousand dollars. The second problem is that our country haven't own any technical and scientific development. And as a consequence, there is no appropriate equipment and experts.

Well, and thirdly most of people just don't know about such opportunities of the latest technologies.

If we increase the interest of students and young researchers of this problem and involve them into the development of own ideas and prototypes, we will be able to hope for any real result and the valid help for disabled people.

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