

Exoskeletons: Market Shares, Strategies, and Forecasts, Worldwide, 2015 to 2021

<https://marketpublishers.com/r/E86CEC251ECEN.html>

Date: April 2015

Pages: 254

Price: US\$ 4,000.00 (Single User License)

ID: E86CEC251ECEN

Abstracts

LEXINGTON, Massachusetts (April 2, 2015) – WinterGreen Research announces that it has published a new study Exoskeleton: Market Shares, Strategy, and Forecasts, Worldwide, 2015 to 2021. The 2015 study has 254 pages, 102 tables and figures. Worldwide markets are poised to achieve significant growth as the exoskeletons are used inside rehabilitation treatment centers and at home to provide stability for paraplegics and people who need gait training. Ultimately exoskeletons will be used for the rehabilitation of all patients with serious physical injuries or physical dysfunction.

Exoskeleton robots support walking for previously wheel chair bound patients: They function as wearable robots that bring new functionality to the rehabilitation markets. Exoskeleton robots promote upright walking and relearning of lost functions in a patient needing physical therapy. Exoskeletons can play a significant role in this medical treatment process. Emerging markets promise to have dramatic and rapid growth. Exoskeletons deliver higher quality rehabilitation, provide growth strategy for clinical facilities.

Relearning of lost functions in a patient depends on stimulation of desire to conquer the disability. The Exoskeleton can show patients progress and keep the progress occurring, encouraging patients to work on getting healthier. Independent functioning of patients depends on intensity of treatment, task-specific exercises, active initiation of movements and motivation and feedback. Exoskeleton can assist with these tasks in multiple ways. Creating a gaming aspect to the rehabilitation process has brought a significant improvement in systems.

As patients get stronger and more coordinated, a therapist can program the exoskeleton robot to let them bear more weight and move more freely in different directions, walking,

kicking a ball, or even lunging to the side to catch one. The robot can follow the patient's lead as effortlessly as a ballroom dancer, its presence nearly undetectable until it senses the patient starting to drop and quickly stops a fall. In the later stages of physical therapy, the robot can nudge patients off balance to help them learn to recover.

According to Susan Eustis, principal author of the team that developed the market research study, "Exoskeleton robotic therapy stimulus of upper and lower limbs provides a way for people who cannot walk to be upright and move from a vertical position, a very exciting market development. Examples of the excellent motor recovery after stroke that can be achieved using an exoskeleton." Lower limb systems and exoskeleton systems provide wheelchair bound patients the ability to get out of a wheelchair.

The exoskeleton products that work are still emerging as commercial devices. All the products that are now commercially viable are positioned to achieve significant staying power in the market long term, providing those companies that offer them with a possibility for long term leadership position in the market.

Rehabilitation robotic technologies developed in the areas of stroke rehabilitation and SCI represent therapeutic interventions with utility at varying points of the continuum of care. Exoskeletons are a related technology, but provide dramatic support for walking for people who simply cannot walk.

Robotics has tremendous ability to reduce disability and lead to better outcomes for patients with paralysis due to traumatic injury. With the use of exoskeletons, patient recovery of function is subtle or non-existent, but getting patients able to walk and move around is of substantial benefit. People using exoskeleton robots are able to make continued progress in regaining functionality even years after an injury.

It is a question of cost. The insurance will only pay for a small amount of exoskeleton rehabilitation. More marketing will have a tremendous effect in convincing people that they can achieve improvements even after years of effort.

Rehabilitation robotics includes development of devices for assisting performance of sensorimotor functions. Devices help arm, hand, leg rehabilitation by supporting repetitive motion that builds neurological pathways to support use of the muscles. Development of different schemes for assisting therapeutic training is innovative. Assessment with sensorimotor performance helps patients move parts of the body that have been damaged.

Robotic exoskeleton rehabilitation equipment is mostly used in rehabilitation clinical facilities, though there is some effort to build a home market. There is a huge opportunity for launching a homecare equipment market if it is done through sports clubs rather than through clinical facilities. People expect insurance to pay for medical equipment but are willing to spend bundles on sports trainer equipment for the home. Exoskeleton can help stroke patients years after an event, so it makes a difference if someone keeps working to improve their functioning.

Exoskeleton realistically extend the use of automated process for rehabilitation in the home. The availability of affordable devices that improve mobility is not likely to go unnoticed by the sports clubs and the baby boomer generation, now entering the over 65 age group and seeking to maintain lifestyle. As clinicians realize that more gains can be made by using Exoskeleton in the home, the pace of acquisitions will likely pick up.

The exoskeleton robot market size at \$16.5 million in 2014 is expected grow dramatically to reach \$2.1 billion by 2021. Exoskeleton markets will be separate and additive to the robotic rehabilitation market. A separate exoskeleton market will create growth by the weight of excellent device capabilities. Market growth is a result of the effectiveness of robotic treatment of muscle difficulty. The usefulness of the Exoskeleton is increasing. Doing more sophisticated combinations of exercise have become more feasible as the technology evolves. Patients generally practice 1,000 varied movements per session. With the robots, more sessions are possible.

WinterGreen Research is an independent research organization funded by the sale of market research studies all over the world and by the implementation of ROI models that are used to calculate the total cost of ownership of equipment, services, and software. The company has 35 distributors worldwide, including Global Information Info Shop, Market Research.com, Research and Markets, Electronics.CA, Bloomberg, and Thompson Financial.

WinterGreen Research is positioned to help customers face challenges that define the modern enterprises. The increasingly global nature of science, technology and engineering is a reflection of the implementation of the globally integrated enterprise. Customers trust WinterGreen Research to work alongside them to ensure the success of the participation in a particular market segment. WinterGreen Research supports various market segment programs; provides trusted technical services to the marketing departments. It carries out accurate market share and forecast analysis services for a range of commercial and government customers globally. These are all vital market

research support solutions requiring trust and integrity.

Contents

EXOSKELETON ROBOTS MARKET SHARES, MARKET STRATEGY, AND MARKET FORECASTS, 2015 TO 2021

EXOSKELETON EXECUTIVE SUMMARY

Exoskeleton Market Driving Forces

Exoskeletons as Rehabilitation Assistive Devices

Exoskeleton Rehabilitation Robots Decrease the Cost of Recovery

Exoskeleton Market Shares

Medical Exoskeleton Market Forecasts

1. EXOSKELETON MARKET DESCRIPTION AND MARKET DYNAMICS

1.1 Market Growth Drivers For Exoskeletons

1.2 Spinal Cord Injury Rehabilitation

1.2.1 Ekso Pulse System

1.2.2 Electrical Stimulation

1.2.3 Robotic Therapy Devices

1.2.4 Partial Body Weight-Supported Treadmill

1.2.5 Virtual Reality (including Wii-hab)

1.2.6 Brain Stimulation

1.2.7 Acupuncture

1.2.8 Mental Practice

1.2.9 Mirror Therapy

1.2.10 Evidence-Based Treatment Protocols

1.3 Traumatic Brain Injury Program

1.3.1 Concussion Program

1.4 Rehabilitation Physical Therapy Trends

1.4.1 Robotic Exoskeleton Team Research Studies

1.4.2 Exoskeleton Research in the Market For Use In Gait Training

1.4.3 Running with Robots

1.4.4 Use Of Video Game Technology In PT

1.4.5 Telemedicine Growing Trend In The Physical Therapy Space

1.5 Exoskeleton Market Definition

1.6 Robotic Rehabilitation Devices Based On Automated Process

1.6.1 Automated Process for Rehabilitation Robots

1.6.2 Why Rehabilitation is Essential

- 1.6.3 Rehabilitation Involves Relearning of Lost Functions
- 1.7 Robotic Exoskeletons Empower Patient Rehabilitation Achievements
 - 1.7.1 Seizing the Robotics Opportunity
 - 1.7.2 Modular Self-Reconfiguring Robotic Systems
- 1.8 Home Medical Exoskeletons
 - 1.8.1 Telemedicine and Domestic Robots
 - 1.8.2 Rehabilitation Robots Provide Intensive Training For Patients And Physical Relief For Therapists

2. EXOSKELETON MARKET SHARES AND MARKET FORECASTS

- 2.1 Exoskeleton Market Driving Forces
 - 2.1.1 Exoskeletons as Rehabilitation Assistive Devices
 - 2.1.2 Exoskeleton Rehabilitation Robots Decrease the Cost of Recovery
- 2.2 Exoskeleton Market Shares
 - 2.2.1 Medical Exoskeleton Rehabilitation Robot Market Shares, Units
 - 2.2.1 Ekso Exoskeleton Market Share Unit Analysis
 - 2.2.2 Ekso Bionics Robotic Suit Helps Paralyzed Man Walk Again
 - 2.2.3 ReWalk Exoskeleton Suit Home Use
 - 2.2.4 AlterG Bionic Leg Customer Base
 - 2.2.5 Hocoma Robotic Rehabilitation
 - 2.2.6 Homoca Helping Patients To Grasp The Initiative And Reach Towards Recovery
 - 2.2.7 Able-Bodied Exoskeletons
- 2.3 Medical Exoskeleton Market Forecasts
 - 2.3.1 Medical Exoskeleton Robot Market Segments
 - 2.3.2 Medical Extremities, Stroke CPM, And Exoskeleton Robot Market Segments
 - 2.3.3 Market for Limited Mobility Devices
 - 2.3.4 Spinal Cord Injuries
- 2.4 Rehabilitation Robot Market Forecasts
 - 2.4.1 Rehabilitation Robots Unit Shipments
 - 2.4.2 Rehabilitation Robots Market Penetration Forecasts Worldwide, 2014-2020
 - 2.4.3 Gait Training
 - 2.4.4 Sports Training
 - 2.4.5 Exoskeletons
 - 2.4.6 End-effectors
 - 2.4.7 Exoskeleton-Based Rehabilitation
 - 2.4.8 Mobility Training Level Of Distribution
- 2.5 Disease Incidence and Prevalence Analysis
 - 2.5.1 Robotic Therapeutic Stroke Rehabilitation

- 2.5.2 Aging Of The Population
- 2.5.3 Disease Rehabilitation
- 2.5.1 Rehabilitation of Hip Injuries
- 2.6 Exoskeleton Prices
 - 2.6.1 Ekso Bionics
- 2.7 Rehabilitation Robots Regional Analysis
 - 2.7.1 Ekso Bionics Regional Presence

3. EXOSKELETON PRODUCTS

- 3.1 Exoskeletons
 - 3.1.1 Muscle Memory
- 3.2 Ekso Bionics
 - 3.2.1 Ekso Gait Training Exoskeleton Uses
 - 3.2.2 Ekso Bionics Rehabilitation
 - 3.2.3 Ekso Bionics Robotic Suit Helps Paralyzed Man Walk Again
 - 3.2.4 Ekso Go To Market Strategy
 - 3.2.5 Ekso Exoskeleton To Achieve Rehabilitation In The Home
- 3.3 Rewalk
 - 3.3.1 ReWalk Exoskeleton Suit Home Use
 - 3.3.2 ReWalk Personal System
 - 3.3.3 ReWalk Rehabilitation
- 3.4 Rex Bionics
- 3.5 Berkley Robotics Laboratory Exoskeletons
 - 3.5.1 Berkley Robotics and Human Engineering Laboratory ExoHiker
 - 3.5.2 Berkley Robotics and Human Engineering Laboratory ExoClimber
 - 3.5.3 Berkeley Lower Extremity Exoskeleton (BLEEX)
 - 3.5.4 Berkley Robotics and Human Engineering Laboratory Exoskeleton
- 3.6 Hocoma Products
 - 3.6.1 Hocoma ArmeoSpring Based On An Ergonomic Arm Exoskeleton
 - 3.6.2 Hocoma ArmeoSpring Clinical Success
 - 3.6.3 Hocoma Armeo Functional Therapy Of The Upper Extremities
 - 3.6.4 Hocoma ArmeoSpring - Functional Arm and Hand Therapy
- 3.7 AlterG: PK100 PowerKnee
 - 3.7.1 AlterG Bionic Leg
 - 3.7.2 Alterg / Tibion Bionic Leg
 - 3.7.3 AlterG Bionic Leg Customer Base
 - 3.7.4 AlterG M300
 - 3.7.5 AlterG M300 Robotic Rehabilitation Treadmill

3.8 Parker Hannifin Indego

3.9 Catholic University of America Arm Therapy Robot ARMin III

3.9.1 Catholic University of America Armin Iii Project Description:

3.9.2 Catholic University of America HandSOME Hand Spring Operated Movement Enhancer

3.10 Sarcos / Raytheon

3.10.1 Raytheon XOS 2: Second Generation Exoskeleton

3.10.2 Sarcos LC Acquires Raytheon Sarcos Unit of Raytheon

3.11 DARPA Funded Exoskeleton

3.12 The Springtail/XFV Exo-skeleton Flying Vehicle

3.13 HEXORR: Hand EXOskeleton Rehabilitation Robot

3.14 Mira Lopes Gait Rehabilitation Device

3.14.1 Prototype of University of Twente LOPES with 8 Actuated Degrees of Freedom

4. EXOSKELETON TECHNOLOGY

4.1 Exoskeleton Medical Technology

4.2 Robotic Actuator Energy

4.2.1 Elastic Actuators

4.3 Rehabilitation Robotic Risk Mitigation

4.4 Exoskeleton Multi-Factor Solutions

4.4.1 Biometallic Materials Titanium (Ti) and its Alloys

4.5 Cognitive Science

4.6 Artificial Muscle

4.7 Regulations

5. EXOSKELETON COMPANY PROFILES

5.1 AlterG

5.1.1 AlterG M300 Customers

5.1.2 AlterG M300

5.1.3 AlterG Acquires Tibion Bionic Leg

5.2 Ekso Bionics

5.2.1 Ekso Exoskeletons for Medical and Wellness:

5.2.2 Ekso Able-bodied Exoskeletons

5.2.3 Ekso Bionics Holdings

5.2.4 Ekso Fourth Quarter And Full Year 2014 Financial Results

5.2.5 Ekso Bionics Seeks To Lead The Technological Revolutions

5.2.6 Ekso Bionics HULC Technology Licensed to the Lockheed Martin Corporation

- 5.2.7 Ekso Bionics Regional Presence
- 5.2.8 Ekso Bionics Customers
- 5.3 Hocoma
 - 5.3.1 Hocoma Revenue
- 5.4 Parker
 - 5.4.1 Parker Revenue for Fiscal 2015 Second Quarter Sales
 - 5.4.2 Parker Hannifin Segment Results Fiscal 2015 Second Quarter
- 5.5 ReWalk Robotics
 - 5.5.1 ReWalk Revenue
 - 5.5.2 ReWalk Year-End 2014 Financial Highlights
- 5.6 RexBionics
- 5.7 Sarcos
 - 5.7.1 Sarcos LC Acquires Raytheon Sarcos Unit
- 5.8 University of Twente

About

ABOUT THE COMPANY

RESEARCH METHODOLOGY

List Of Tables

LIST OF TABLES AND FIGURES

Table ES-1 Rehabilitation Robot Market Driving Forces

Figure ES-2 Exoskeleton Market Shares, Dollars, Worldwide, 2014

Figure ES-3 Medical Exoskeleton Robot Market Shipments Forecasts Dollars, Worldwide, 2015-2021

Table 1-1 Robotic Rehabilitation Devices Automated Process Benefits

Table 1-2 Robotic Rehabilitation Devices Emerging Technologies

Table 1-3 Robotic Rehabilitation Wearable Devices Benefits

Table 1-4 Rehabilitation Involves Relearning Lost Function

Table 1-5 Rehabilitation Lost Function Relearning Initiatives

Table 2-1 Rehabilitation Robot Market Driving Forces

Figure 2-2 Exoskeleton Market Shares, Dollars, Worldwide, 2014

Table 2-3 Exoskeleton Market Shares, Dollars, Worldwide, 2014

Table 2-4 Exoskeleton Rehabilitation Robot Market Shares, Dollars and Units, Worldwide, 2014

Table 2-5 Hocoma Robotic Rehabilitation Used In Rehabilitation Medicine:

Figure 2-6 Homoca Continuum of Rehabilitation

Figure 2-7 Comparison of the Hocoma Armeo Products

Figure 2-8 Medical Exoskeleton Robot Market Shipments Forecasts Dollars, Worldwide, 2015-2021

Table 2-9 Exoskeleton Robots: Dollars Shipments, Worldwide, 2015-2021

Table 2-10 Exoskeleton Robots: Units Shipments, Worldwide, 2015-2021

Table 2-11 Medical Exoskeleton Robot Market Segments, High End and Low End, Units and Dollars, Worldwide, 2015-2021

Table 2-12 Medical Rehabilitation and Exoskeleton Robot Market Segments: Extremities, Stroke CPM, and Exoskeletons, Dollars, Worldwide, 2015-2021

Table 2-13 Medical Rehabilitation Robot, Extremities, Stroke CPM, and Exoskeleton Market Segments, Percent, Worldwide, 2015-2021

Table 2-14 Spinal Cord Injury Causes, Worldwide, 2014

Figure 2-15 Rehabilitation Robot Market Forecasts Dollars, Worldwide, 2015-2021

Table 2-16 Rehabilitation Robots Market Forecasts, Dollars, Shipments, Worldwide, 2015-2021

Figure 2-17 Rehabilitation Robots: Units Shipments, Worldwide, 2015-2021

Table 2-18 Rehabilitation Robots: Units Shipments, Worldwide, 2015-2021

Figure 2-19 Rehabilitation Robots: Facility Market Penetration Forecasts, Units, Worldwide, 2014-2020

Table 2-20 Rehabilitation Facility Robot Market Penetration Forecasts Worldwide, 2014-2020

Table 2-21 Exoskeleton Market Penetration Forecasts Worldwide, High End Facilities, Small and Mid Size Rehabilitation Facilities, 2014-2020

Table 2-22 Exoskeleton Market Segments, Lower Extremities, Upper Extremities, Anti-Gravity High End, Anti-Gravity Low End, and Tools Worldwide, 2014-2020

Table 2-23 Rehabilitation Small and Mid-Size Facility Robot Market Penetration Forecasts Worldwide, 2014-2020

Table 2-24 Rehabilitation High End Facility Robot Market Penetration Forecasts, Worldwide, 2014-2020

Table 2-25 Rehabilitation Robot Categories

Table 2-26 US Stroke Incidence Numbers

Table 2-27 Physical Therapy Enhances Recovery After Hip Injury

Figure 2-28 Rehabilitation Robots Regional Market Segments, Dollars, 2014

Table 2-29 Rehabilitation Robots Regional Market Segments, 2014

Figure 2-30 Ekso Bionics Regional Presence Source: Ekso Bionics.

Figure 3-1 Ekso Technology

Figure 3-2 Ekso Bionics Gait Training

Figure 3-3 Ekso Bionics Gait Training Functions

Table 3-4 Ekso Gait Training Exoskeleton Functions

Table 3-5 Ekso Gait Training Exoskeleton Functions

Figure 3-6 Ekso Bionics Step Support System

Table 3-7 Ekso Bionics Operation Modes

Figure 3-9 Ekso Bionics Bionic Suit

Table 3-10 Ekso GT Variable Assist to Physical Conditions

Figure 3-11 ReWalk Robotics Exoskeleton Technology

Figure 3-12 ReWalk Robotics Exoskeleton Wrist Technology

Figure 3-13 ReWalk Controls Movement Using Subtle Changes In Center Of Gravity, Mimics The Natural Gait Pattern Of The Legs

Figure 3-14 ReWalk Forward Tilt Of The Upper Body Is Sensed By The System, Which Triggers The First Step

Figure 3-15 RexBionics Hands-Free, Robotic Walking Device

Figure 3-16 Berkley Robotics and Human Engineering Laboratory ExoHiker

Figure 3-17 Berkley Robotics and Human Engineering Laboratory ExoClimber

Table 3-18 Berkley Robotics and Human Engineering Laboratory Exoskeleton

Figure 3-19 Hocoma Lokomat Pro

Table 3-20 Hocoma Patient Rehabilitation Conditions Addressed

Table 3-21 Hocoma Robotic Improvements to Rehabilitation

Table 3-22 Hocoma Products

Table 3-23 Hocoma Rehabilitation Functional Therapy
Figure 3-24 Hocoma Armeo Power Robotic Arm Exoskeleton
Figure 3-25 Clinical Example of Patients Using the Hocoma ArmeoSpring
Figure 3-26 AlterG: PK100 PowerKnee
Figure 3-27 AlterG Bionic Neurologic And Orthopedic Therapy Leg
Figure 3-28 Tibion Bionic Leg
Figure 3-29 AlterG M300 Robotic Rehabilitation Treadmill
Figure 3-30 AlterG M300 Robotic Leg, Knee and Thigh Rehabilitation Treadmill
Table 3-31 AlterG Anti-Gravity Treadmill Precise Unweighting Technology Patient Rehabilitation Functions168
Figure 3-32 AlterG Anti-Gravity Treadmill Heals patient Faster
Figure 3-33 Paretic Hannifin Indego Exoskeleton
Figure 3-34 ARMin III Robot For Movement Therapy Following Stroke
Figure 3-35 Sarcos Exoskeleton Developed by Raytheon
Figure 3-36 Raytheon XOS Exoframe
Figure 3-37 Raytheon XOS Exoskeleton
Figure 3-38 Raytheon XOS 2: Second Generation Exoskeleton
Figure 3-39 Sarcos Wear Exoskeleton Timeline
Figure 3-40 Raytheon Tethered Exoskeleton
Figure 3-41 The Springtail/XFV Exo-skeleton Flying Vehicle
Table 3-42 HEXORR: Hand EXOskeleton Rehabilitation Robot Technology Benefits
Table 3-43 HEXORR: Hand EXOskeleton Rehabilitation Robot Technology Monitoring
Table 3-44 HEXORR: Hand EXOskeleton Rehabilitation Robot Treatment Benefits
Table 3-45 HEXORR: Hand EXOskeleton Rehabilitation Robot Technology Force and Motion Sensor Benefits
Figure 3-46 Prototype of LOPES with 8 actuated Degrees of Freedom by Means Of Series Elastic Actuation
Table 4-1 Exoskeleton System Concerns Addressed During System Design
Table 4-5 Rehabilitation Robots Software Functions
Table 5-1 AlterG Anti-Gravity Treadmillsr Features
Built on differential air pressure technology
Table 5-2 AlterG Anti-Gravity Treadmillsr Target Markets
Table 5-3 AlterG Product Positioning
Figure 5-4 Selected US Regional AlterG M300 Customer Clusters
Figure 5-5 AlterG / Tibion Bionic Leg
Figure 5-6 Ekso Bionics Regional Presence
Table 5-7 Hocoma Robotic Rehabilitation Used In Rehabilitation Medicine:
Table 5-8 Hocoma Therapy Solutions Treatments

I would like to order

Product name: Exoskeletons: Market Shares, Strategies, and Forecasts, Worldwide, 2015 to 2021

Product link: <https://marketpublishers.com/r/E86CEC251ECEN.html>

Price: US\$ 4,000.00 (Single User License / Electronic Delivery)

If you want to order Corporate License or Hard Copy, please, contact our Customer Service:

info@marketpublishers.com

Payment

To pay by Credit Card (Visa, MasterCard, American Express, PayPal), please, click button on product page <https://marketpublishers.com/r/E86CEC251ECEN.html>

To pay by Wire Transfer, please, fill in your contact details in the form below:

First name:
Last name:
Email:
Company:
Address:
City:
Zip code:
Country:
Tel:
Fax:
Your message:

****All fields are required**

Customer signature _____

Please, note that by ordering from marketpublishers.com you are agreeing to our Terms & Conditions at <https://marketpublishers.com/docs/terms.html>

To place an order via fax simply print this form, fill in the information below and fax the completed form to +44 20 7900 3970