

**Rehabilitation Robots Market Shares, Strategies, and Forecasts,
Worldwide, 2019 to 2025**

Mountains of Opportunity



Picture by Susan Eustis

WinterGreen Research, Inc.

Lexington, Massachusetts

www.wintergreenresearch.com

781 853 5078

REPORT # SH28084999

564 PAGES

269 TABLES AND FIGURES

2019

\$4,400 SINGLE COPY -- \$8,800 WEB SITE POSTING

CHECK OUT THESE KEY TOPICS

Rehabilitation Robots Support Stroke Recovery to Achieve Lifestyle

Rehabilitation Robots
Stroke Protocols
Active Prostheses
Exoskeletons
Robotic Technologies
Leverage Neuroplasticity
Wearable Robotics
Strengthen The Upper
Extremity
Strengthen The Lower
Extremity
Hand Rehabilitation
Physical Therapy Automation
Recovery After Hip Injury
Wrist Rehabilitation
Stroke Rehabilitation

Rehabilitation Robots
Software
Hip Rehabilitation
Anti-Gravity Treadmill
Continuous Positive Motion
CPM
Spinal Cord Injury
Rehabilitation

Abdominal Surgical Robotics
Surgical Robots
Medical Devices
Healthcare Robotics
Surgical Enabling
Technology

Robotic-Assisted Minimally
Invasive Surgery
Robotic Surgical System
Medical / Surgical Delivery
Robots
Surgical Assistive
Technology
Hospital Robots
Robotic Surgery Equipment
Surgical Robot Applications
Next Generation Robotic
Surgery
Flexible Robot Platform,
Minimally Invasive Surgery
MIS

Rehabilitation Robots Market Analysis:

**Rehabilitation Robots: Market Strategies and Forecasts, Worldwide,
2019-2025**

LEXINGTON, Massachusetts (January 7, 2019) – WinterGreen Research announces that it has published a new study **Rehabilitation Robots: Market Shares, Strategy, and Forecasts, Worldwide, 2019 to 2025**. The 2019 study has 564 pages, 269 tables and figures. Worldwide Rehabilitation Robot markets are expected to achieve significant growth as robots replace much of the human work in physical therapy.

The robots are steadier, make fewer mistakes, support treatment for longer durations, and decrease the cost of rehabilitation for many conditions. The robots permit a more accurate rehabilitation routine for any specific condition than is possible with human physical therapy in many cases.

REPORT # SH28084999

564 PAGES

269 TABLES AND FIGURES

2019

\$4,400 SINGLE COPY -- \$8,800 WEB SITE POSTING

WinterGreen Research, INC.

Robotics has tremendous ability to reduce disability and lead to better outcomes for patients with stroke. With the use of rehabilitation robots, patient recovery of function is able to be more substantial than what is achieved now. Whereas traditional rehabilitation with a human therapist goes on for a few weeks, people using robots are able to make continued progress in regaining functionality even years after an injury or stroke.

It is a question of cost. While insurance pays for a small amount of rehabilitation needed, generally provided by a human therapist, using a robot is far less costly process, and can be effective over the long term, even without reimbursement. Marketing has a tremendous effect in convincing people that they can achieve improvements from rehabilitation processes even after years of effort.

Rehabilitation robotics devices are used 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 robotic schemes for assisting therapeutic training is innovative.

According to Susan Eustis, principal author of the team that developed the market research study, “Robotic therapy stimulus of upper limbs provides an example of the excellent motor recovery after stroke that can be achieved using rehabilitation robots.” Lower limb systems and exoskeleton systems provide wheelchair bound patients the ability to get out of a wheelchair

No company dominates the entire rehabilitation robot market sector. The 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.

Robotic rehabilitation equipment is mostly used in rehabilitation clinical facilities. 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. Rehabilitation robots can help stroke patients years after an event, so it makes a difference if someone keeps working to improve their functioning.

Vendors will very likely have to develop a strong rehabilitation robotic market presence as these devices evolve a homecare aspect. The expense of nursing home rehabilitation has been very high, limiting the use of rehabilitation to a few weeks or months at the most.

Rehabilitation robots 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.

REPORT # SH28084999

564 PAGES

269 TABLES AND FIGURES

2019

\$4,400 SINGLE COPY -- \$8,800 WEB SITE POSTING

WinterGreen Research, INC.

As clinicians realize that more gains can be made by using rehabilitation robots in the home, the pace of acquisitions will likely pick up.

Rehabilitation robot market size at \$641 million in 2018 is expected grow dramatically to reach \$6.4 billion by 2025. Exoskeleton markets will be separate and additive to this market. A separate exoskeleton market will create more growth. Market growth is a result of the effectiveness of robotic treatment of muscle difficulty. The usefulness of the rehabilitation robots 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, and Thompson Financial. It conducts its business with integrity.

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.

Key Words: Rehabilitation Robots, Active Prostheses, Exoskeletons , Robotic Technologies Leverage Neuroplasticity, Wearable Robotics, Strengthen The Upper Extremity, Strengthen The Lower Extremity, Hand Rehabilitation, Physical Therapy Automation, Recovery After Hip Injury, Wrist Rehabilitation, Stroke Rehabilitation, Rehabilitation Robots Software, Hip Rehabilitation, Anti-Gravity Treadmill, Spinal Cord Injury Rehabilitation,.

REPORT # SH28084999

564 PAGES

269 TABLES AND FIGURES

2019

\$4,400 SINGLE COPY -- \$8,800 WEB SITE POSTING

Companies Profiled

Market Leaders

**DJO Global
DIH / Hocoma
Performance Health / Patterson
Medical
AlterG**

**Ekso Bionics
ReWalk Robotics
Myomo
Bionik / Interactive Motion
Technologies
Intuitive Surgical**

Selected Market Participants

**Berkley Robotics and Human
Engineering Laboratory
Biodex
Bioness
Catholic University of America
Biodex
Bioness
DJO Global
Fanuc
Focal Meditech
Furniss
Hocoma**

**Honda Motor
Instead Technologies
Invacare
iRobot
Interactive Motion Technologies
(IMT)
InMotion Robots
Interaxon
KDM
Kinova
KLC Services
Medi**

**MRISAR
Orthocare Innovations
Patterson
ProMed Products Xpress
Reha-Stim
Robotdalen
RSL Steeper
RU Robots
Secom
Sunrise Medical
Touch Bionics
Tyromotion**

**Rehabilitation Robots: Market Shares, Strategies, and Forecasts,
Worldwide, 2019 to 2025**

Report Methodology

This is the 808th report in a series of primary market research reports that provide forecasts in communications, telecommunications, the Internet, computer, software, telephone equipment, health equipment, and energy. Automated process and significant growth potential are a priority in topic selection. The project leaders take direct responsibility for writing and preparing each report. They have significant experience preparing industry studies. They are supported by a team, each person with specific research tasks and proprietary automated process database analytics. Forecasts are based on primary research and proprietary data bases.

The primary research is conducted by talking to customers, distributors and companies. The survey data is not enough to make accurate assessment of market size, so WinterGreen Research looks at the value of shipments and the average price to achieve market assessments. Our track record in achieving accuracy is unsurpassed in the industry. We are known for being able to develop accurate market shares and projections. This is our specialty.

The analyst process is concentrated on getting good market numbers. This process involves looking at the markets from several different perspectives, including vendor shipments. The interview process is an essential aspect as well. We do have a lot of granular analysis of the different shipments by vendor in the study and addenda prepared after the study was published if that is appropriate.

Forecasts reflect analysis of the market trends in the segment and related segments. Unit and dollar shipments are analyzed through consideration of dollar volume of each market participant in the segment. Installed base analysis and unit analysis is based on interviews and an information search. Market share analysis includes conversations with key customers of products, industry segment leaders, marketing directors, distributors, leading market participants, opinion leaders, and companies seeking to develop measurable market share.

Over 200 in depth interviews are conducted for each report with a broad range of key participants and industry leaders in the market segment. We establish accurate market forecasts based on economic and market conditions as a base. Use input/output ratios, flow charts, and other economic methods to quantify data. Use in-house analysts who meet stringent quality standards.

REPORT # SH28084999

564 PAGES

269 TABLES AND FIGURES

2019

\$4,400 SINGLE COPY -- \$8,800 WEB SITE POSTING

WinterGreen Research, INC.

Interviewing key industry participants, experts and end-users is a central part of the study. Our research includes access to large proprietary databases. Literature search includes analysis of trade publications, government reports, and corporate literature.

Findings and conclusions of this report are based on information gathered from industry sources, including manufacturers, distributors, partners, opinion leaders, and users. Interview data was combined with information gathered through an extensive review of internet and printed sources such as trade publications, trade associations, company literature, and online databases. The projections contained in this report are checked from top down and bottom up analysis to be sure there is congruence from that perspective.

The base year for analysis and projection is 2018. With 2018 and several years prior to that as a baseline, market projections were developed for 2019 through 2025. These projections are based on a combination of a consensus among the opinion leader contacts interviewed combined with understanding of the key market drivers and their impact from a historical and analytical perspective.

The analytical methodologies used to generate the market estimates are based on penetration analyses, similar market analyses, and delta calculations to supplement independent and dependent variable analysis. All analyses are displaying selected descriptions of products and services.

The report provides an executive-level blueprint of the rehabilitation robot market beginning with the definition of the market dynamics. The analysis classifies the market in terms of products, application, and key geographic regions. Presenting a detailed value chain analysis, the study evaluates the set of region-specific approaches forged by the industry. To determine the market potential for rehabilitation robots in the international scenario, the study delves into the competitive landscape and development landscape exhibited by the key geographic regions covering " U.S., Europe, Japan, China and India, Asia Pacific Remaining, and the Rest of World "

The report's analysis is based on technical data and industry figures sourced from the most reputable databases. Other aspects that will prove especially beneficial to readers of the report are: investment feasibility analysis, recommendations for growth, investment return analysis, trends analysis, opportunity analysis, and SWOT analyses of competing companies. With the help of inputs and insights from technical and marketing experts, the report presents an objective assessment of the market.

REPORT # SH28084999

564 PAGES

269 TABLES AND FIGURES

2019

\$4,400 SINGLE COPY -- \$8,800 WEB SITE POSTING

WinterGreen Research, INC.

This report also presents product specification, manufacturing process, and product cost structure etc. Production is separated by regions, technology and applications. Analysis also covers upstream raw materials, equipment, Downstream client survey, Marketing channels, Industry development trend and proposals. In the end, the report includes Exoskeleton new project SWOT analysis, Investment feasibility analysis, Investment return analysis, and Development trend analysis. In conclusion, it is a deep research report on Global robots industry. Here, we express our thanks for the support and assistance from industry chain related technical experts and marketing engineers during Research Team's survey and interviews.

Other important aspects that have been meticulously studied in the market report are: Demand and supply dynamics, import and export scenario, industry processes and cost structures, and major R&D initiatives. The new opportunities they present to market players have been mentioned in the report.

This research includes referencde to an ROI model that is part of a series that provides IT systems financial planners access to information that supports analysis of all the numbers that impact management of a product launch or large and complex data center. The methodology used in the models relates to having a sophisticated analytical technique for understanding the impact of workload on processor consumption and cost.

WinterGreen Research has looked at the metrics and independent research to develop assumptions that reflect the actual anticipated usage and cost of systems. Comparative analyses reflect the input of these values into models.

The variables and assumptions provided in the market research study and the ROI models are based on extensive experience in providing research to large enterprise organizations and data centers. The ROI models are useful for comparing products from different manufacturers, for example servers from different manufacturers, Systems z models from IBM, and labor costs by category around the world.

This information has been developed from WinterGreen research proprietary data bases constructed as a result of preparing market research studies that address the software, energy, healthcare, telecommunications, and hardware businesses.

YOU MUST HAVE THIS STUDY

REPORT # SH28084999

564 PAGES

269 TABLES AND FIGURES

2019

\$4,400 SINGLE COPY -- \$8,800 WEB SITE POSTING

Rehabilitation Robots: Market Shares, Strategy, and Forecasts, 2017 to 2023

Table of Contents

Rehabilitation Robots: Executive Summary

The study is designed to give a comprehensive overview of the Rehabilitation Robots market segment. Research represents a selection from the mountains of data available of the most relevant and cogent market materials, with selections made by the most senior analysts. Commentary on every aspect of the market from independent analysts creates an independent perspective in the evaluation of the market. In this manner the study presents a comprehensive overview of what is going on in this market, assisting managers with designing market strategies likely to succeed.

REHABILITATION ROBOTS MARKET SHARES, MARKET STRATEGY, AND MARKET FORECASTS, 2019 TO 2025	1
2	
REHABILITATION ROBOT EXECUTIVE SUMMARY	35
Rehabilitation Robot Market Driving Forces	35
Rehabilitation Robots Assistive Devices	38
Rehabilitation Robots Decrease the Cost of Recovery	39
Rehabilitation Robot Medical Conditions Treated	41
Robotic Modules for Disability Therapy	42
Wearable Robotics for Disability Therapy	43
Rehabilitation Robots Leverage Neuroplasticity	45
Rehabilitation Robot Market Shares	46
Rehabilitation Robot Market Forecasts	47
1. REHABILITATION ROBOT MARKET DESCRIPTION AND MARKET DYNAMICS	49
1.1 Rehabilitation Robot Market Definition	49
1.2 Rehabilitation Physical Therapy Trends	50
1.2.1 Therapy Apps	51
1.2.2 Exoskeleton Suit	51
1.2.3 Running with Robots	52
1.2.4 Use of Video Game Technology In PT	53
1.2.5 Telemedicine Growing Trend In The Physical Therapy	53
1.3 Stroke Rehabilitation	54
1.3.1 Stroke Protocols	55
1.3.2 Rehabilitation Medicine: New Therapies in Stroke Rehabilitation	56
1.3.3 Botulinum Toxin Injections	57
1.3.4 Constraint Induced Movement Therapy (CIMT)	57
1.3.5 Dynamic Splinting	58
1.3.6 Electrical Stimulation	58
1.3.7 Robotic Therapy Devices	58
1.3.8 Partial Body Weight-Supported Treadmill	59
1.3.9 Virtual Reality (including Wii-hab)	59
1.3.10 Brain Stimulation	59
1.3.11 Acupuncture	60
1.3.12 Mental Practice	60
1.3.13 Mirror Therapy	60
1.3.14 Hyperbaric Oxygen Therapy	60
1.3.15 Evidence-Based Treatment Protocols	61
1.3.16 Home Mobility Exoskeletons	61

WinterGreen Research, INC.

1.4	Exoskeleton Able-Bodied Industrial Applications	62
1.5	Restoring Physical Function Through Neuro-Rehabilitation After Stroke	63
1.5.1	Traumatic Brain Injury Program	65
1.5.2	Concussion Program	66
1.5.3	Hospital Stroke Programs Rapid Response to Create Better Outcomes	66
1.5.4	Stroke Response Process Leverage Protocols that Implement Streamlined Timely Treatment	67
2.	REHABILITATION ROBOT MARKET SHARES AND MARKET FORECASTS	69
2.1	Rehabilitation Robot Market Driving Forces	69
2.1.1	Rehabilitation Robots Assistive Devices	73
2.1.2	Rehabilitation Robots Decrease the Cost of Recovery	74
2.1.3	Rehabilitation Robot Medical Conditions Treated	76
2.1.4	Robotic Modules for Disability Therapy	76
2.1.5	Wearable Robotics for Disability Therapy	78
2.1.6	Rehabilitation Robots Leverage Principles Of Neuroplasticity	80
2.2	Rehabilitation Robot Market Shares	81
2.2.1	DJO Global Business Activities	85
2.2.2	AlterG Bionic Leg Customer Base	87
2.2.3	Myomo	87
2.2.4	Performance Health / Patterson Medical	89
2.2.5	DIH International Limited / Hocoma	89
2.2.6	Bionik Laboratories / Interactive Motion Technologies (IMT)	89
2.2.7	Hocoma Robotic Rehabilitation	90
2.2.8	Homoca Helping Patients To Grasp The Initiative And Reach Towards Recovery	91
2.2.9	Ekso Bionics Robotic Suit Helps Paralyzed Man Walk Again	94
2.2.10	Rewalk	95
2.2.11	Karman Xo-202 Standing Wheelchair Power Stand Power Drive	96
2.3	Rehabilitation Robot Market Share Unit Analysis	98
2.3.1	Medical Rehabilitation Robot Market Analysis	99
2.4	Rehabilitation Robot Market Forecasts	101
2.4.1	Rehabilitation Robot Unit Shipments	107
2.4.2	Rehabilitation Robots Market Segments: Lower Extremities, Upper Extremities, Neurological Training, Exoskeleton, Stroke CPM	108
2.5	Rehabilitation Robot And Motorized CPM Equipment	114
2.6	Global Exoskeleton Market	118
2.7	Rehabilitation Robotics Prices	121
2.7.1	Danniflex 480 Lower Limb CPM Unit	121
2.7.2	Patterson Kinetec CPM	122
2.7.3	Chattanooga Atromot	128
2.7.4	Ekso Bionics	137
2.7.5	Interaxon Muse	138
2.8	Rehabilitation Robotics Regional Analysis	139
2.8.1	Ekso Bionics Regional Presence	140
3.	REHABILITATION ROBOTS MARKET METRICS AND DEVICES	142
3.1	Upper and Lower limb Stroke Rehabilitation Devices	142
3.1.1	Upper Limb Stroke Rehabilitation Devices	142
3.2	Rehabilitation Robot Market Metrics	143
3.2.1	Types of Conditions and Rehabilitation Treatment by Condition	144
3.2.2	Clinical Evidence and Reimbursement	148
3.2.3	Stroke	149
3.2.4	Early Rehab After Stroke	151
3.2.5	Multiple Sclerosis	151
3.2.6	Knee-Replacement Surgery	151
3.2.7	Medicare Coverage of CPM	151
3.2.8	Hip	153
3.2.9	Gait Training	153
3.2.10	Sports Training	154
3.2.11	Severe Injury or Amputation	154

REPORT # SH28084999

564 PAGES

269 TABLES AND FIGURES

2019

\$4,400 SINGLE COPY -- \$8,800 WEB SITE POSTING

WinterGreen Research, INC.

3.2.12	Neurological Disorders	155
3.2.13	Recovery After Surgery	155
3.2.14	Conditions with Severe Extremity Pain / Number of Patients	156
3.3	Types of Rehabilitation Robots and Conditions Treated	157
3.3.1	Gait Training Devices / Unweighting Systems	158
3.3.2	Euro-Rehabilitation	158
3.3.3	Prostheses	160
3.3.4	Motorized Physiotherapy CPM (Continuous Passive Motion), CAM Therapy (Controlled Active Motion) and the Onboard Protocols	161
3.3.5	Gait Training Devices / Unweighting Systems / Automated Treadmills	161
3.3.6	Rehabilitation Therapy Robotics	161
3.3.7	Upper Limb Robotic Rehabilitation	162
3.3.8	Shoulder Biomechanics	163
3.3.9	Exoskeletons	164
3.3.10	Exoskeleton-Based Rehabilitation	165
3.3.11	End-effectors	166
3.3.12	Mobility Training Level Of Distribution	166
3.3.13	Rehabilitation Robots Cost-Benefit-Considerations	167
3.3.14	Rehabilitation Systems	167
3.3.15	Robotic Therapeutic Stroke Rehabilitation	168
3.4	Disease Incidence and Prevalence Analysis	168
3.4.1	Aging Of The Population	168
3.4.2	Chronic Disease Rehabilitation	168
3.5	Service Robots	169
3.5.1	Next Generation Personal And Service Robotics	170
3.5.2	Focal Meditech BV Mealtime Support and Stress Reduction: Hand Function	170
3.5.3	Rehabilitation of Hip Injuries	171
3.5.4	iRobot / InTouch Health	172
3.6	Neurological Training	174
3.6.1	Neuro-Rehabilitation	174
3.7	Interaxon	174
3.7.1	Interaxon Muse: Brainwave Category Biometrics	177
3.7.2	Interaxon Motivates Brain Activity	179
3.7.3	Interaxon Muse Improves Response To Stress, Lowers Blood Pressure	179
3.7.4	Interaxon Muse Gives Self-Control	180
3.7.5	Interaxon Muse Can Improve Emotional State	180
3.7.6	Interaxon Muse Extended Use Lasting Results	181
3.7.7	Interaxon Muse Types of Feedback	182
3.8	Active Prostheses	182
3.8.1	Neuronal-Device Interfaces	183
3.9	Pererro - Switch Access Control	183
3.9.1	Pererro+	184
3.9.2	RSL Steeper V3 Myoelectric Hand	185
3.10	Humanware In-Home Rehabilitation	188
3.10.1	Muscle Memory	188
3.11	Rewalk	189
3.12	Permobil F5 Corpus VS Stand Sequence	192
3.13	Karman Xo-202 Standing Wheelchair Power Stand Power Drive	193
3.14	Berkeley Robotics Laboratory Exoskeletons	194
3.15	Exoskeleton Designed by CAR	195
3.16	CAREX Upper Limb Robotic Exoskeleton	197
3.17	Egto Tech	198
3.17.1	Egto Tech Luna Dynamic Resistance	199
3.17.2	Egto Tech Luna Objective Diagnostics	199
3.18	Motorized Physiotherapy CPM Continuous Passive Motion and Onboard Protocols	199
3.18.1	Movement Of Synovial Fluid To Allow For Better Diffusion Of Nutrients Into Damaged Cartilage	201
3.19	Global Medical	202

REPORT # SH28084999

564 PAGES

269 TABLES AND FIGURES

2019

\$4,400 SINGLE COPY -- \$8,800 WEB SITE POSTING

WinterGreen Research, INC.

3.20	Furniss Corporation	206
3.20.1	Furniss Corporation Continuous Passive Motion DC2480 Knee CPM	211
3.21	Danniflex	212
3.21.1	Danniflex 480 Lower Limb CPM Unit	213
3.22	Rehab-Robotics Company	215
3.22.1	Rehab-Robotics Hand of Hope	217
3.22.2	Rehab-Robotics Hand & Arm Training	221
3.23	Bioxtreme	223
3.24	Corbys 224	
3.24.1	Corbys System	225
3.25	Swtotek Motion Maker	229
4.	REHABILITATION ROBOTS TECHNOLOGY	230
4.1	Robotic Actuator Energy	230
4.1.1	Elastic Actuators	231
4.1.2	InMotion Robots Technology	232
4.2	Human Motor Error Enhancement Technology	233
4.2.1	Enhancing a Motor Error Improves Motor Skills	233
4.2.2	Adaptation to Error Enhancing Forces	233
4.2.3	Bioxtreme's Error Enhancement Technology Potential Applications	234
4.3	Rehabilitation Robotic Risk Mitigation	235
4.4	Rehabilitation Robot Multi-Factor Solutions	238
4.4.1	Biometallic Materials Titanium (Ti) and its Alloys	238
4.5	Berkley Robotics and Human Engineering Laboratory	239
4.6	Rehabilitation Robot Automated Technique	239
4.6.1	InMotion Robots Technology	241
4.7	HEXORR: Hand EXOskeleton Rehabilitation Robot	243
4.8	ARMin: Upper Extremity Robotic Therapy	246
4.9	HandSOME: Hand Spring Operated Movement Enhancer	247
4.10	Cognitive Science	248
4.11	Lopes Gait Rehabilitation Device	248
4.12	Restoration of Sensation To A Paralyzed Man's Arm	249
4.13	Artificial Muscle	250
4.14	ReWalk™ Exoskeleton Suit	251
5.	REHABILITATION ROBOT COMPANY PROFILES	252
5.1	AlterG	252
5.1.1	AltgerG M320 Anti-Gravity Treadmill	256
5.1.2	AlterG® Anti-Gravity Treadmill in Action	257
5.1.3	AlterG: PK100 PowerKnee	259
5.1.4	AlterG Bionic Leg	260
5.1.5	Alterg / Tibion Bionic Leg	262
5.1.6	AlterG Bionic Leg Customer Base	264
5.1.7	AlterG M300	264
5.1.8	AlterG M300 Robotic Rehabilitation Treadmill	266
5.1.9	AlterG M300 Customers	269
5.2	Aretech	274
5.3	Berkley Robotics and Human Engineering Laboratory	277
5.4	Biodex	280
5.4.1	Biodex Clinical Advantage	281
5.5	Bioness	282
5.6	Bionik Laboratories / Interactive Motion Technologies (IMT)	282
5.6.1	Bionik Laboratories Acquires Interactive Motion Technologies, Inc. (IMT)	283
5.6.2	Biomarkers Of Motor Recovery	290
5.6.3	InMotion Robot Medical Conditions Treated	290
5.6.4	Interactive Motion Technologies (IMT) InMotion ARM™ Software	291
5.6.5	Bionik Laboratories Fiscal Year 2018 Revenue	292
5.7	Biodex Unweighting Systems	294

REPORT # SH28084999

564 PAGES

269 TABLES AND FIGURES

2019

\$4,400 SINGLE COPY -- \$8,800 WEB SITE POSTING

WinterGreen Research, INC.

5.7.1	Biodex BioStep® 2 Semi-Recumbent Elliptical	295
5.7.2	Biodex BioStep 2 Helps Patients and Their Therapists Achieve Multiple Rehabilitation Objectives	296
5.7.3	Older Adults / Preambulation	296
5.7.4	Cardiac Rehabilitation	296
5.7.5	Biodex System 4 Pro	297
5.8	Bioxtreme	298
5.9	Breg 299	
5.10	Catholic University of America HandSOME Hand Spring Operated Movement Enhancer	300
5.11	Claflin Rehabilitation Distribution	300
5.12	DIH International Limited / Hocoma	307
5.12.1	Swiss Hocoma Merges with Hong Kong Based DIH International	308
5.12.2	DIH and Hocoma Synergistic Collaboration	308
5.12.3	Hocoma Partnership With The Slovenian Software Company XLAB	311
5.12.4	Hocoma Andago	312
5.12.5	Hocoma Lokomat Functional Electrical Stimulation	315
5.12.6	Hocoma ArmeoSpring for Stroke Victims	317
5.12.7	Hocoma ArmeoSpring Based On An Ergonomic Arm Exoskeleton	319
5.12.8	Hocoma Armeo®Spring Clinical Success	319
5.12.9	Hocoma Armeo Functional Therapy Of The Upper Extremities	320
5.12.10	Hocoma Armeo®Spring - Functional Arm and Hand Therapy	321
5.12.11	Hocoma Valedo Functional Movement Therapy For Low Back Pain Treatment	323
5.12.12	DIH / Hocoma Revenue	324
5.13	DJO Global	325
5.13.1	DJO Global Trademarks, Service Marks And Brand Names	328
5.13.2	DJO Global Business Activities	331
5.13.3	DJO / Chattanooga	331
5.13.4	Chattanooga Active-K CPM (Continuous Passive Motion)	335
5.13.5	DJO Revenue	347
5.13.6	Third Quarter Highlights	348
5.13.7	Business Transformation	348
5.13.8	Sales Results	348
5.13.9	DJO Global	349
5.14	Ekso Bionics	350
5.14.1	Ekso Rehabilitation Robotics	352
5.14.2	Ekso GT	352
5.14.3	Ekso Bionics HULC Technology Licensed to the Lockheed Martin Corporation	355
5.14.4	Ekso Bionics Customers	356
5.14.5	Ekso and Lockheed	363
5.14.6	Ekso Bionics	363
5.14.7	Ekso Bionics Wearable Bionic Suit	364
5.14.8	Ekso Gait Training Exoskeleton Uses	367
5.14.9	Ekso Bionics Robotic Suit Helps Paralyzed Man Walk Again	372
5.14.10	Ekso Bionics Revenue	372
5.15	Fanuc - Industrial Robot Automation Systems and Robodrill Machine Centers	374
5.16	Focal Meditech	374
5.16.1	Focal Meditech BV Collaborating Partners:	376
5.17	Hobart Group / Motorika	377
5.17.1	Motorika	378
5.17.2	Hobart Group / MedInvest Group / Motorika	379
5.17.3	Motorika ReoGo	379
5.17.4	Hobart Motorik ReoGo Portable Platform Shoulder, Elbow, And Forearm	380
5.17.5	Motorika ReoAmbulator Innovative Robotic Gait Training System	382
5.17.6	Motorika	383
5.18	Honda Gait Training	385
5.18.1	Honda Motor ASIMO Humanoid Robot	389
5.18.2	Honda Motor	393
5.18.3	Honda Walk Assist	393

REPORT # SH28084999

564 PAGES

269 TABLES AND FIGURES

2019

\$4,400 SINGLE COPY -- \$8,800 WEB SITE POSTING

WinterGreen Research, INC.

5.18.4	Honda Stride Management Motorized Assist Device	395
5.18.5	Honda Builds Unique Transportation Exoskeleton Device Market	396
5.19	Instead Technologies	396
5.19.1	Instead Technologies Services:	398
5.19.2	Instead Technologies	399
5.19.3	Instead Technologies RoboTherapist3D and 2D	400
5.19.4	Instead Technologies RoboTherapist3D	400
5.19.5	Instead Technologies Ultrasound Breast Volumes Breast Explorer	403
5.20	Interaxon	407
5.21	iRobot 407	
5.21.1	iRobot / InTouch Health	407
5.22	Kinova JACO	410
5.23	KLC Services	412
5.24	Madison Dearborn Partners	412
5.25	Mobility Research	412
5.25.1	Mobility Research HugN-Go	414
5.25.2	Mobility Research HugN-Go 350	414
5.25.3	Mobility Research LiteGait	415
5.26	MossRehab	418
5.27	Myomo 419	
5.27.1	Myomo mPower 1000	420
5.27.2	Myomo MyoPro Motion G – Elbow-Wrist-Hand Orthosis	420
5.27.3	MyoPro Myoelectric Orthotics And Prosthetics	421
5.27.4	Myomo Neuro-Robotic Myoelectric Arm Orthosis System	422
5.27.5	Myomo EMG	423
5.27.6	Myomo Brace For Medical Professionals Permits A Paralyzed Individual To Perform Activities Of Daily Living	423
5.27.7	Myomo Brace For Medical Professionals Permits A Paralyzed Individual To Perform Activities Of Daily Living	425
5.27.8	Myomo Brace For Medical Professionals Permits A Paralyzed Individual To Perform Activities Of Daily Living	427
5.27.9	Myomo Brace For Medical Professionals Permits A Paralyzed Individual To Perform Activities Of Daily Living	429
5.27.10	Myomo Revenue	431
5.28	Orthocare Innovations	433
5.28.1	Orthocare Innovations Adaptive Systems™ For Advanced O&P Solutions.	434
5.28.2	Orthocare Innovations Prosthesis	435
5.28.3	Orthocare Innovations Edison™ Adaptive Vacuum Suspension System	436
5.28.4	Orthocare Innovations Edison Adaptive Prosthesis	437
5.28.5	Orthocare Innovations Intelligent Adaptive Prosthesis	437
5.28.6	Orthocare Innovations Edison Leg and Ankle	438
5.28.7	Orthocare Innovations Galileo Connector Technology	441
5.28.8	Orthocare Innovations Compas	442
5.29	Performance Health	443
5.29.1	Performance Health / Paterson Kinetec CPM	443
5.29.2	Paterson / Kinetec Spectra Knee CPM	445
5.30	ProMed Products Xpress	447
5.31	Reha-Stim	448
5.31.1	Reha-Stim Support Patients In Restoring Arm And Hand Function	448
5.31.2	Reha-Stim Medtec and YouRehab Merger	449
5.31.3	Reha-Stim Gait Trainer GT I	449
5.31.4	Reha-Stim Gait Trainer Target Market	453
5.31.5	Reha-Stim Support Patients In Restoring And Improving Gait Function	453
5.32	Rehabilitation Supply	454
5.33	Rehab-Robotics Company	455
5.34	ReWalk Robotics	456
5.34.1	Rewalk Robotics Revenue	458
5.35	Robotdalen	459
5.36	RSL Steeper	460
5.36.1	RSL Steeper Hand Prostheses	461
5.36.2	RSL Steeper Electronic Assistive Technology Devices for the Home	461

REPORT # SH28084999

564 PAGES

269 TABLES AND FIGURES

2019

\$4,400 SINGLE COPY -- \$8,800 WEB SITE POSTING

WinterGreen Research, INC.

5.37	R U Robots	463
5.37.1	RU Robots	464
5.37.2	RU Robots Sunflower Robot	466
5.37.3	RU Robots Sophisticated Interactions	467
5.37.4	RU Robots Care-o-bot	468
5.38	Secom 469	
5.38.1	Secom Co.Ltd MySpoon	469
5.38.2	Secom Co.Ltd MySpoon Manual Mode	470
5.39	Touch Bionics	473
5.39.1	Touch Bionics' i-limb	475
5.39.2	Touch Bionics i-limb Muscle Triggers	476
5.39.3	Touch Bionics I-Limb Methods For Switching Modes	477
5.39.4	Touch Bionics Prostheses	480
5.39.5	Touch Bionics Active Prostheses	484
5.40	Tyromotion GmbH	486
5.40.1	Tyromotion GmbH Network	487
5.40.2	Tyromotion Diego - Robotic-assisted arm-rehabilitation	492
5.40.3	Tyromotion Therapy for Arms and Shoulders	493
5.41	Other Rehabilitation Robot Companies	494
5.41.1	Additional Rehabilitation Robots	510
5.41.2	Selected Rehabilitation Equipment Companies	513
5.41.3	Spinal Cord Treatment Centers in the US	525
6.	REHABILITATION ROBOT VARIATIONS	540
6.1	Automated Process for Rehabilitation Robots	540
6.1.1	Why Rehabilitation is Essential	545
6.1.2	Rehabilitation Involves Relearning of Lost Functions	546
6.2	Continuous Passive Motion CPM Definition	550
6.3	Robotic Exoskeletons Empower Patient Rehabilitation Achievements	552
6.3.1	Rehabilitation Options	554
6.3.2	Rehabilitation Robots Economies Of Scale	554
6.4	Seizing the Robotics Opportunity	555
6.4.1	Modular Self-Reconfiguring Robotic Systems	556
6.5	Public Awareness of Rehabilitation Robotics	556
6.5.1	Rehabilitation Robotics Centers Of Excellence	557
6.6	Home Medical Rehabilitation Robots	557
6.6.1	US Veterans Administration Telemedicine and Domestic Robots	558
6.6.2	Rehabilitation Robots Provide Intensive Training For Patients And Physical Relief For Therapists	559
	ABOUT THE COMPANY	560
	Research Methodology	560
	WinterGreen Research Process	562
	Market Research Study	562
	WinterGreen Research Global Market Intelligence Company	563

List of Figures

2		
Figure 1.	Rehabilitation Robotics Products Market Driving Factors	36
Figure 2.	Rehabilitation Robot Market Driving Forces	40
Figure 3.	Rehabilitation Robot Medical Conditions Treated	41
Figure 4.	Stroke Rehabilitation Guidelines For Interactive Robotic Therapy	42
Figure 5.	Extremity Rehabilitation Robot Technology	43
Figure 6.	Health Care Conditions Treated With Rehabilitation Wearable Robotics	44
Figure 7.	Robotic Technologies Leverage Neuroplasticity	45

REPORT # SH28084999

564 PAGES

269 TABLES AND FIGURES

2019

\$4,400 SINGLE COPY -- \$8,800 WEB SITE POSTING

WinterGreen Research, INC.

Figure 8.	Neuro-Rehabilitation Patient Conditions Addressed	64
Figure 9.	Neuro-Rehabilitation Services	65
Figure 10.	Stroke Response Process Leverage Protocols Interdisciplinary Team Composition	67
Figure 11.	Stroke Treatment State-Of-The-Art, Full-Service Stroke Treatment Facilities	68
Figure 12.	Rehabilitation Robotics Products Market Driving Factors:	70
Figure 13.	Rehabilitation Robot Tasks	72
Figure 14.	Rehabilitation Robot Market Driving Forces	75
Figure 15.	Rehabilitation Robot Medical Conditions Treated	76
Figure 16.	Stroke Rehabilitation Guidelines For Interactive Robotic Therapy	77
Figure 17.	Extremity Rehabilitation Robot Technology	78
Figure 18.	Health Care Conditions Treated With Rehabilitation Wearable Robotics	79
Figure 19.	Robotic Technologies Leverage Principles Of Neuroplasticity	81
Figure 20.	Rehabilitation Robot Market Shares, Dollars, Worldwide, 2018	82
Figure 21.	Rehabilitation Robot Market Shares, Dollars, Worldwide, 2018	83
Figure 22.	Rehabilitation Therapy Robots Market Participant Descriptions Worldwide, 2018	84
Figure 23.	DJO Smart Knee Brace	86
Figure 24.	Hocoma Robotic Rehabilitation Used In Rehabilitation Medicine:	90
Figure 25.	Homoca Continuum of Rehabilitation	93
Figure 26.	Karman Xo-202 Standing Wheelchair Power Stand Power Drive	96
Figure 27.	Rehabilitation Therapy Robots Market Shares, Dollars and Units, Worldwide, 2018	98
Figure 28.	Rehabilitation Robots Market Forecasts, Dollars, Shipments, Worldwide, 2018-2025	102
Figure 29.	Rehabilitation Robot Market Forecasts, Dollars, Worldwide, 2018-2025	103
Figure 30.	Rehabilitation Robot Market Segment Forecasts, Stroke, Paraplegia, Concussion, Multiple Sclerosis, and Cerebral Palsy. Dollars, Worldwide, 2018-2025	105
Figure 31.	Rehabilitation Robot Market Segment Forecasts, Stroke, Paraplegia, Concussion, Multiple Sclerosis, and Cerebral Palsy. Percent, Worldwide, 2018-2025	106
Figure 32.	Rehabilitation Robots: Units Shipments, Worldwide, 2018-2025	107
Figure 33.	Rehabilitation Robot Market Segment Forecasts, Lower Extremities, Upper Extremities, Neurological Training, CPM, Dollars, Worldwide, 2018-2025	109
Figure 34.	Rehabilitation Robot Market Segment Forecasts, Lower Extremities, Upper Extremities, Neurological Training, CPM, Percent of Units, Worldwide, 2018-2025	110
Figure 35.	Rehabilitation Robots Market Segments	111
Figure 36.	Rehabilitation Robot Unit Installed Base Forecasts, Units, Worldwide, 2018-2025	112
Figure 37.	Rehabilitation Robot Unit Percent Robots per Facility Analysis Forecasts, Units, Worldwide, 2018-2025	112
Figure 38.	Motorized CPM Stroke Rehabilitation Equipment Market Shares, Unit and Dollars, Worldwide, 2018	115
Figure 39.	Rehabilitation Robot CPM Market Segments, Worldwide, 2018-2025	116
Figure 40.	Rehabilitation Robot Market Segment Forecasts, Lower Extremities, Upper Extremities, Neurological Training, CPM, Per Cent of Units, 2018-2025	117
Figure 41.	Exoskeleton Market Shares, Dollars, Worldwide, 2018	119
Figure 42.	Chattanooga Continuous Passive Motion	124
Figure 43.	Rehabilitation Robot Regional Market Segments, Dollars, 2018	139
Figure 44.	Rehabilitation Robot Regional Market Segments, 2018	140
Figure 45.	Ekso Bionics Regional Presence	141
Figure 46.	Selected Upper Limb Stroke Rehabilitation Devices	143
Figure 47.	U.S. Rehab Patient Demographics	145
Figure 48.	Market Metrics for Rehab Patients	146
Figure 49.	Spinal Cord Injuries Causes, Number, Worldwide, 2018	148
Figure 50.	US Stroke Incidence Numbers	150
Figure 51.	Chattanooga OptiFlex® 3 Knee Continuous Passive Motion (CPM) Device	152
Figure 52.	Rehabilitation Robot Categories	157
Figure 53.	Shoulder Biomechanics Functions	163
Figure 54.	Physical Therapy Enhances Recovery After Hip Injury	172

REPORT # SH28084999

564 PAGES

269 TABLES AND FIGURES

2019

\$4,400 SINGLE COPY -- \$8,800 WEB SITE POSTING

WinterGreen Research, INC.

Figure 55.	InTouch Health	173	
Figure 56.	InteraXon Muse Headband	175	
Figure 57.	Interaxon Finely Calibrated Brain Wave Sensors	177	
Figure 58.	InteraXon Measuring Brainwaves	178	
Figure 59.	Lower Limb Prosthetic Designed By The Center For Intelligent Mechatronics	182	
Figure 60.	RSLSteeper Pererro+	184	
Figure 61.	RSLSteeper Pererro+ Key Features:	185	
Figure 62.	RSL Steeper Bebionic's Standard Glove	186	
Figure 63.	RSL Steeper Prosthesis Hand	187	
Figure 64.	Rewalk-Robotics-Personal Support	191	
Figure 65.	Permobil F5 Corpus VS Stand Sequence	192	
Figure 66.	Karman Xo-202 Standing Wheelchair Power Stand Power Drive	193	
Figure 67.	Karman Xo-202 Standing Wheelchair Power Stand Power Drive Features	194	
Figure 68.	Berkeley Robotics Austin	194	
Figure 69.	Motorized Physiotherapy Controlled Mobilization Goals of Phase 1 Rehabilitation	200	
Figure 70.	Continuous Passive Motion (CPM) Device Benefits Following Knee Arthroplasty	201	
Figure 71.	Global Medical CPM device	202	
Figure 72.	Global Medical CPM device Features	203	
Figure 73.	Global Medical Handheld Controller	204	
Figure 74.	Furniss Corporation Model 1800™ Knee CPM	207	
Figure 75.	Furniss Corporation CPM 1800 Features	208	
Figure 76.	Furniss Corporation CP	209	
Figure 77.	Furniss Corporation Phoenix Model 1850 Knee CPM	210	
Figure 78.	Furniss Corporation Continuous Passive Motion DC2480 Knee CPM	211	
Figure 79.	Danniflex 480 Lower Limb CPM Unit	213	
Figure 80.	Danniflex Lower Limb CPM Features	214	
Figure 81.	Rehab-Robotics Company Hand of Hope Therapeutic Device	215	
Figure 82.	Rehab-Robotics Repetitive Training System	216	
Figure 83.	Rehab-Robotics Hand of Hope Movement Control	218	
Figure 84.	Rehab-Robotics Modes Provide Different Levels Of Assistance In Movement Of Patient's Hand	219	
Figure 85.	Rehab-Robotics Different Modes	220	
Figure 86.	Rehab-Robotics Arm Training	221	
Figure 87.	Rehab-Robotics Hand of Hope Modes	222	
Figure 88.	Bioxtreme Robotic Rehabilitation System	223	
Figure 89.	Corbys Rehabilitation Robot	224	
Figure 90.	Corbys System Functions	225	
Figure 91.	Corbys Rehabilitation System	226	
Figure 92.	Corbys Rehabilitation Orthosis Actuation Test Stand	227	
Figure 93.	Corbys Mobile Robotic Gait Rehabilitation System	228	
Figure 94.	Swtotek Leg Orthosis of Motion Maker	229	
Figure 95.	Rehabilitation Robot System Concerns Addressed During System Design	235	
Figure 96.	Rehabilitation Systems Initiate Active Movements	236	
Figure 97.	Methods of Active Initiation of Movements In Robotic Rehabilitation	237	
Figure 98.	Users Find Robots Preferable and More Versatile than Inadequate Human Trainers	237	
Figure 99.	Rehabilitation Robots Software Functions	241	
Figure 100.	InMotion Robots Immediate Interactive Response Sets	242	
Figure 101.	HEXORR: Hand Exoskeleton Rehabilitation Robot Technology Benefits	244	
Figure 102.	HEXORR: Hand Exoskeleton Rehabilitation Robot Technology Monitoring	244	
Figure 103.	HEXORR: Hand EXOskeleton Rehabilitation Robot Treatment Benefits	245	
Figure 104.	HEXORR: Hand EXOskeleton Rehabilitation Robot Technology Force and Motion Sensor Benefits	246	
Figure 105.	Hand Spring Operated Movement Enhancer	247	
Figure 106.	Hand Spring Robot Operated Movement Enhancer	247	
Figure 107.	AlterG Anti-Gravity Treadmills Features, Built On Differential Air Pressure Technology	252	

REPORT # SH28084999

564 PAGES

269 TABLES AND FIGURES

2019

\$4,400 SINGLE COPY -- \$8,800 WEB SITE POSTING

WinterGreen Research, INC.

Figure 108.	AlterG Anti-Gravity Treadmills Target Markets	253
Figure 109.	AlterG Product Positioning	254
Figure 110.	AlterG Anti-Gravity Treadmill Customer Base	255
Figure 111.	AltgerG M320 Anti-Gravity Treadmill	256
Figure 112.	AlterG® Anti-Gravity Treadmill Functions	257
Figure 113.	Alterg Therapy Functions	258
Figure 114.	AlterG: PK100 PowerKnee	259
Figure 115.	AlterG Bionic Neurologic And Orthopedic Therapy Leg	261
Figure 116.	AlterG M300 Robotic Rehabilitation Treadmill	264
Figure 117.	AlterG M300 Robotic Leg, Knee and Thigh Rehabilitation Treadmill	265
Figure 118.	AlterG Anti-Gravity Treadmill Precise Unweighting Technology Patient Rehabilitation Functions	266
Figure 119.	AlterG Anti-Gravity Treadmill Heals Patient	268
Figure 120.	Selected US Regional AlterG M300 Customer Clusters	270
Figure 121.	Afotech ZeroG Gait & Balance	275
Figure 122.	Aretech Rehabilitation Robot	276
Figure 123.	Berkley Robotics and Human Engineering Laboratory Research Work	278
Figure 124.	Berkley Robotics and Human Engineering Laboratory Research Work	279
Figure 125.	Selected Bionik International Clinical Partners	283
Figure 126.	Interactive Motion Technologies (IMT) InMotion Biomarkers Aid Stroke Recovery	289
Figure 127.	Interactive Motion Technologies (IMT) InMotion Robot Medical Conditions Treated	290
Figure 128.	Interactive Motion Technologies (IMT) InMotion ARM™ Software Functions	291
Figure 129.	Interactive Motion Technologies (IMT) 2D Gravity Compensated Therapy Is More Effective Than 3D Spatial Therapy	292
Figure 130.	Biodex Dynamometer Target Markets	294
Figure 131.	Biodex BioStep® 2 Semi-Recumbent Elliptical	295
Figure 132.	Biodex System 4 Pro	297
Figure 133.	Bioxtreme Robotics Rehabilitation For Cerebral Stroke Or Traumatic Brain Injuries (TBI) On Error Enhancement Technology	298
Figure 134.	Breg Home Therapy CPM Continuous Passive Motion Practice Kits	299
Figure 135.	Hocoma Robotic Rehabilitation Used In Rehabilitation Medicine:	309
Figure 136.	Hocoma Therapy Solutions Treatments	310
Figure 137.	Hocoma Lokomat Pro	313
Figure 138.	Hocoma Patient Rehabilitation Conditions Addressed	314
Figure 139.	Hocoma Robotic Improvements to Rehabilitation	315
Figure 140.	Hocoma Lokomats Robot	316
Figure 141.	Hocoma ArmeoSpring for Stroke Victims	317
Figure 142.	Hocoma ArmeoSpring for Children	318
Figure 143.	Hocoma Armeo Power Robotic Arm Exoskeleton	321
Figure 144.	Clinical Example of Patients Using the Hocoma Armeo®Spring	322
Figure 145.	Hocoma Valedo Functional Lower Back Movement Therapy	323
Figure 146.	Hocoma Valedo®Motion Low Back Pain Therapy Advantages	324
Figure 147.	DJO Smart Knee Brace	326
Figure 148.	DJO Rehabilitation Product Target Markets	327
Figure 149.	DJO Rehabilitation Product Targets Care Givers	327
Figure 150.	Chattanooga OptiFlex® Knee Continuous Passive Motion (CPM)	333
Figure 151.	Chattanooga CPM Unique Features:	333
Figure 152.	Chattanooga CPM New/Improved Features:	334
Figure 153.	Chattanooga CPM Standard Features:	334
Figure 154.	Chattanooga CPM Specifications:	335
Figure 155.	Chattanooga CPM	335
Figure 156.	Chattanooga Active-K Functions	336
Figure 157.	DJO Chattanooga Active-K	337
Figure 158.	Chattanooga Active-K Motorized Physiotherapy Unit Integration Benefits	338

REPORT # SH28084999

564 PAGES

269 TABLES AND FIGURES

2019

\$4,400 SINGLE COPY -- \$8,800 WEB SITE POSTING

WinterGreen Research, INC.

Figure 159.	Chattanooga Active-K Motorized Physiotherapy Controlled Mobilization	339
Figure 160.	Chattanooga Active-K Motorized Physiotherapy CPM (Continuous Passive Motion)	340
Figure 161.	Chattanooga Active-K Motorized Physiotherapy Controller	341
Figure 162.	DJO Chattanooga Active-K Features:	342
Figure 163.	DJO Chattanooga Active-K Features:	343
Figure 164.	Chattanooga Active-K Motorized Physiotherapy Therapeutic Benefits	344
Figure 165.	Chattanooga OptiFlex® 3 Elbow Continuous Passive Motion (CPM)	345
Figure 166.	Chattanooga OptiFlex® 3 Elbow Continuous Passive Motion (CPM) Specifications:	345
Figure 167.	Chattanooga OptiFlex® 3 Elbow Continuous Passive Motion (CPM) Flexion	346
Figure 168.	Ekso Bionics Regional Presence	356
Figure 169.	Ekso Technology	365
Figure 170.	Ekso Bionics Gait Training	366
Figure 171.	Ekso Bionics Gait Training Functions	367
Figure 172.	Ekso Gait Training Exoskeleton Functions	368
Figure 173.	Ekso Gait Training Exoskeleton Functions	368
Figure 174.	Ekso Bionics Step Support System	369
Figure 175.	Ekso Bionics Operation Modes	370
Figure 176.	Ekso Bionics Beep Bop: Rethink Robotics' Baxter Model	371
Figure 177.	Ekso Bionics Bionic Suit	371
Figure 178.	Ekso Bionics Financial Results	373
Figure 179.	FOCAL Meditech BV Products:	375
Figure 180.	Focal Meditech BV Collaborating Partners:	376
Figure 181.	Motorika ReoGo	379
Figure 182.	Motorik ReoGo™ Therapist Benefits:	381
Figure 183.	Motorik ReoGo™ Patient Benefits:	382
Figure 184.	Motorika ReoAmbulator	383
Figure 185.	Motorika ReoAmbulator and Gait Training Devices	385
Figure 186.	Honda Walk assist	386
Figure 187.	Honda Stride Management	387
Figure 188.	Honda Walk Assist Device Specifications	389
Figure 189.	Honda ASIMO	390
Figure 190.	Honda ASIMO Front Position	391
Figure 191.	Honda ASIMO Dimensions and Weight	392
Figure 192.	Honda ASIMO Intelligence Features	392
Figure 193.	Honda Walk Assist	394
Figure 194.	Honda Motors Prototype Stride Management Motorized Assist Device	395
Figure 195.	Instead Technologies Research:	397
Figure 196.	Instead Technologies Consultancy Services:	398
Figure 197.	Instead Technologies Advantages of RoboTherapist3D Therapy:	401
Figure 198.	Instead Technologies RoboTherapist 3D RT3D Arm	401
Figure 199.	Instead Technologies RoboTherapist 3D RT3D Cup	402
Figure 200.	Instead Technologies RT3D Hand	402
Figure 201.	Instead Technologies RoboTherapist 3D RT3D Ring Structure	403
Figure 202.	Instead Technologies Ultrasound Breast Volumes. BreastExplorer	404
Figure 203.	Instead Technologies Ultrasound Breast Volumes Breast Explorer Handheld Device	405
Figure 204.	Instead Technologies Ultrasound Breast Volumes Breast Explorer Screen Display	406
Figure 205.	iRobot / InTouch Health RP-VITA	408
Figure 206.	iRobot / InTouch Health RP-VITA	409
Figure 207.	Kinova Robot Specifications	410
Figure 208.	Kinova Robot Features	411
Figure 209.	Mobility Research LiteGait Device	413
Figure 210.	Mobility Research HugN-Go 350	414
Figure 211.	Mobility Research HugN-Go 350 Supported Ambulation Device	415

REPORT # SH28084999

564 PAGES

269 TABLES AND FIGURES

2019

\$4,400 SINGLE COPY -- \$8,800 WEB SITE POSTING

WinterGreen Research, INC.

Figure 212.	Mobility Research LiteGait Solution for Gait Therapy	416
Figure 213.	Mobility Research LiteGait Advanced Solutions For Gait Therapy	417
Figure 214.	Myomo MyoPro Motion G – Elbow-Wrist-Hand Orthosi	420
Figure 215.	MyoPro Motion-G Elbow-Wrist-Hand Orthosis Benefits	421
Figure 216.	Myopro Motion-G Clinical Criteria	422
Figure 217.	Myomo Mpower 1000 Indications	424
Figure 218.	Myomo mPower 1000 Contraindications	424
Figure 219.	Myomo Mpower 1000 Indications	426
Figure 220.	Myomo mPower 1000 Contraindications	426
Figure 221.	Myomo Mpower 1000 Indications	428
Figure 222.	Myomo mPower 1000 Contraindications	428
Figure 223.	Myomo Mpower 1000 Indications	430
Figure 224.	Myomo mPower 1000 Contraindications	430
Figure 225.	Myomo Revenue	432
Figure 226.	Orthocare Innovations Prosthesis	435
Figure 227.	Orthocare Innovations Edison Prosthesis Ankle and Foot	436
Figure 228.	Orthocare Innovations Edison Leg and Ankle	439
Figure 229.	Orthocare Innovations Prosthetic Foot That Adjusts Automatically	440
Figure 230.	Orthocare Innovations	441
Figure 231.	Paterson Kinetec Knee CPM	444
Figure 232.	Paterson Kinetec Spectra Knee CPM Features:	445
Figure 233.	Paterson Kinetec Spectra Knee CPM Treatment Modes	446
Figure 234.	Reha-Stim Gait Trainer GT I	449
Figure 235.	Reha-Stim Gait Trainer Improves The Patient Ability To Walk Through Continuous Practice451	
Figure 236.	ReWalker	457
Figure 237.	Rewalk Robotics Revenue	458
Figure 238.	RUR Key Market Areas For Robotic Technologies	464
Figure 239.	RU Robots Core Technologies And Competencies	465
Figure 240.	RU Robots Advanced Robotics	466
Figure 241.	RU Robots Sophisticated Interactions	467
Figure 242.	RU Robots Care-o-bot Large Service Robot	468
Figure 243.	Secom Co.Ltd MySpoon Manual and Semi-Automatic Mode	470
Figure 244.	Secom Co.Ltd MySpoon Automatic Mode	471
Figure 245.	Secom Co.Ltd MySpoon Features in Semi-Automatic Mode	472
Figure 246.	Secom Co.Ltd MySpoon Automatic Mode	472
Figure 247.	Touch Bionics Prosthetic Technologies	474
Figure 248.	Touch Bionics' i-limb Functions	475
Figure 249.	Touch Bionics i-limb Muscle Triggers	476
Figure 250.	Touch Bionics Quick Grips	479
Figure 251.	Touch Bionics Prostheses	480
Figure 252.	Touch Bionics Active Prostheses	482
Figure 253.	Touch Bionics Active prostheses	484
Figure 254.	Touch Bionics Products	485
Figure 255.	Tyromotion GmbH Employee Group	486
Figure 256.	Tyromotion GmbH Pablo@Plus System Strengthens The Upper Extremity Hand, Arm And Wrist Functions	488
Figure 257.	Tyromotion Network	488
Figure 258.	Tyromotion Bilateral 3D Arm Robot And Virtual Reality Glasses	489
Figure 259.	Tyromotion Virtual Reality Therapy Delivers 3D Training	490
Figure 260.	Tyromotion Virtual Reality Therapy 3D Training	491
Figure 261.	Tyromotion Diego	492
Figure 262.	Advantages of Rehabilitation Robot Therapy with Tyromotion DIEGO	494
Figure 263.	Robotic Rehabilitation Devices Automated Process Benefits	541

REPORT # SH28084999

564 PAGES

269 TABLES AND FIGURES

2019

\$4,400 SINGLE COPY -- \$8,800 WEB SITE POSTING

WinterGreen Research, INC.

Figure 264.	Robotic Rehabilitation Devices Emerging Technologies	544
Figure 265.	Robotic Rehabilitation Wearable Devices Benefits	545
Figure 266.	Rehabilitation Involves Relearning Lost Function	547
Figure 267.	Rehabilitation Lost Function Relearning Initiatives	548
Figure 268.	CPM Functions:	551
Figure 269.	CPM Use Indications:	551

REPORT # SH28084999

564 PAGES

269 TABLES AND FIGURES

2019

\$4,400 SINGLE COPY -- \$8,800 WEB SITE POSTING

ABOUT THE COMPANY

WinterGreen Research, research strategy relates to identifying market trends through reading and interviewing opinion leaders. By using analysis of published materials, interview material, private research, detailed research, social network materials, blogs, and electronic analytics, the market size, shares, and trends are identified. Analysis of the published materials and interviews permits WinterGreen Research senior analysts to learn a lot more about markets. Discovering, tracking, and thinking about market trends is a high priority at WinterGreen Research. As with all research, the value proposition for competitive analysis comes from intellectual input.

WinterGreen Research, founded in 1985, provides strategic market assessments in telecommunications, communications equipment, health care, Software, Internet, Energy Generation, Energy Storage, Renewable energy, and advanced computer technology. Industry reports focus on opportunities that expand existing markets or develop major new markets. The reports access new product and service positioning strategies, new and evolving technologies, and technological impact on products, services, and markets. Innovation that drives markets is explored. Market shares are provided. Leading market participants are profiled, and their marketing strategies, acquisitions, and strategic alliances are discussed. The principals of WinterGreen Research have been involved in analysis and forecasting of international business opportunities in telecommunications and advanced computer technology markets for over 30 years.

The studies provide primary analytical insight about the market participants. By publishing material relevant to the positioning of each company, readers can look at the basis for analysis. By providing descriptions of each major participant in the market, the reader is not dependent on analyst assumptions, the information backing the assumptions is provided, permitting readers to examine the basis for the conclusions.

WinterGreen Research is positioned to help customers facing 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.

REPORT # SH28084999

564 PAGES

269 TABLES AND FIGURES

2019

\$4,400 SINGLE COPY -- \$8,800 WEB SITE POSTING

WinterGreen Research, INC.

ABOUT THE PRINCIPAL AUTHOR

Susan Eustis, President, co-founder of WinterGreen Research is a senior analyst. She has done research in communications and computer markets and applications. She holds several patents in microcomputing and parallel processing. She has the original patents in electronic voting machines. She has new patent applications in format varying, multiprocessing, and electronic voting. She is the author of recent studies of the Solar Renewable Energy, Wind Energy, Thin Film Batteries, Business Process Management marketing strategies, Internet equipment, biometrics, a study of Internet Equipment, Worldwide Telecommunications Equipment, Top Ten Telecommunications, Digital Loop Carrier, Web Hosting, Web Services, and Application Integration markets.

Ms. Eustis is a graduate of Barnard College. Ms. Eustis was named Top Woman CEO in 2012 by Who's Who Worldwide. She was named Top Woman Market Research Analyst the same year and successive years 2013, 2014, 2015, 2016, 2017, and 2018 thereafter. She has been featured twice on the cover of Women of Distinction. She was cited in a recent Time Magazine article and major media articles on Youth Sports market growth. She was also featured in recent Wall Street Journal, New York Times, HBO, and London Times articles.

About the WinterGreen Research Team: The WinterGreen Research Team is comprised of senior analysts that prepare the market research and analysis that is offered to the client and developed using an iterative process to achieve a final study. Typical projects include providing market/viability research. The team can look at how drones can be applied to critical infrastructures safety, including: type of market existing, Barriers, Forecast demand and competitors, SWOT and competitive advantages, Price Analysis, product design recommendations (marketing orientation).

Research is typically for many different regions or localities, for example EU countries including Spain, UK, Nordic, Germany, and France. Typical projects profile the United States and areas of Asia. It is common to three representative countries from South America, Brazil, Argentina, Chile, and Mexico. Representative countries from Asia APAC typically include Japan, China, India, and Australia.

Critical infrastructure safety, including: type of market existing, barriers to entry and to faithful execution of product provision, forecast of demand, market share, SWOT, competitive advantage of major competitors, identification of new technologies and new companies, price performance analysis, product design recommendations, and marketing considerations are typical topics covered.

REPORT # SH28084999

564 PAGES

269 TABLES AND FIGURES

2019

\$4,400 SINGLE COPY -- \$8,800 WEB SITE POSTING