Zacks Small-Cap Research

April 15, 2016

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Bionik Laboratories (BNKL-OTCBB)

BNKL: ARKE Poised To Take Share of Budding Exoskeleton Market. Initiating Coverage at Buy

Current Recommendation	**Buy**
Prior Recommendation	N/A
Date of Last Change	04/13/2016
Current Price (04/14/16)	$0.83
Target Price	**$1.25**

OUTLOOK

The market for lower-body medical exoskeletons, which is still very much in its infancy, includes a portion of the roughly 3.7M Americans and 10M+ people worldwide living with some form of paralysis. Only a handful of the 20 or more companies developing medical exoskeletons currently have a product on the market and while some are farther along than others in commercialization, none have established a dominant position. We think the market can sustain several players. BNKL recently completed development of its next-gen ARKE exoskeleton. Potential competitive advantages of ARKE include lower price point, ease of use and data analytics. ARKE is expected to enter and complete clinical validation this year. If all goes well it could launch in Canada and Europe in 1H 2017. FDA approval is longer-term goal. We think positive outcomes of certain events including third-party validation, regulatory clearance, and successfully integration of proposed IMT acquisition, among others, could be catalysts to moving the share price higher.

SUMMARY DATA

52-Week High	**$1.24**
52-Week Low	**$0.60**
One-Year Return (%)	**N/A**
Beta	**N/A**
Average Daily Volume (sh)	**3,644**
Shares Outstanding (mil)	**73**
Market Capitalization ($mil)	**$60**
Short Interest Ratio (days)	**N/A**
Institutional Ownership (%)	**0**
Insider Ownership (%)	**32**
Annual Cash Dividend	**$0.00**
Dividend Yield (%)	**0.00**
5-Yr. Historical Growth Rates	
Sales (%)	**N/A**
Earnings Per Share (%)	**N/A**
Dividend (%)	**N/A**
P/E using TTM EPS	**N/A**
P/E using 2016 Estimate	**N/A**
P/E using 2017 Estimate	**N/A**
Zacks Rank	**N/A**

Risk Level	**N/A,**
Type of Stock	**Small-Growth**
Industry	**Med Instruments**

ZACKS ESTIMATES

Revenue
(in 000s of $)

	Q1 (Mar)	Q2 (Jun)	Q3 (Sep)	Q4 (Dec)	Year (Dec)
2015	0 A	0 A	0 A	0 A	0 A
2016					1,100 E
2017					2,100 E
2018					2,450 E

Earnings per Share

	Q1 (Mar)	Q2 (Jun)	Q3 (Sep)	Q4 (Dec)	Year (Dec)
2015					-$0.08 A
2016					-$0.09 E
2017					-$0.10 E
2018					-$0.09 E

Zacks Projected EPS Growth Rate - Next 5 Years % **N/A**

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SNAPSHOT

Bionik Laboratories Corp. (BNKL) is a pre-revenue stage company engaged in the development of products for individuals suffering from spinal cord injuries (SCI) and certain mobility-inhibiting diseases. The company's lead product candidate, ARKE, is a lower-body powered exoskeleton initially targeted for the rehabilitation clinic market and later, potentially, for home use.

Exoskeletons, in the context of this report, are frames attached to the outside of the body which are powered by electric or pneumatic motors to assist in the movement of the limbs. In addition to medical applications, exoskeletons have also been designed for military and industrial use in order to provide for greater endurance and strength of able-bodied individuals. But to-date, the area where these machines have generated the most interest is with full or partial paralysis of the legs due to SCI and other conditions that severely limit mobility of the lower body such as stroke, multiple sclerosis (MS) and cerebral palsy (CP).

In the rehabilitation clinic setting they are used to reduce paralysis-related complications which can include deep vein thrombosis, autonomic dysreflexia, bone loss, pressure sores and others. For home use they can also be used as a mobility aid and may be a substitute for wheelchairs. The rehabilitation clinic market is where the majority of sales to-date have been made, although the home-use segment looks to become much more viable with advances in technology.

The market for lower-body medical exoskeletons includes a portion of the roughly 3.7M Americans and 10M+ people worldwide living with some form of paralysis. The industry is still very much in its infancy despite several new entrants over the last few years. Industry analysts peg the current market for exoskeletons (in all applications) at just around $17M but forecast this to grow to $2.1B by 2021 (99% CAGR).

Only a handful of the 20 or more companies developing medical exoskeletons currently have a product on the market and while some are farther along than others in commercialization, none have established a dominant position. The environment is dynamic and characterized by lack of widespread or consistently reliable reimbursement, rapid technological advances, wide diversity in functionality and cost, recent regulatory changes and different penetration strategies by the various industry participants.

This offers potentially significant opportunity for those that can most effectively navigate the challenges of the immature yet nascent medical exoskeleton market. Attributes such as ease of use for both the patient and clinician, affordability, programmability, size (i.e. bulkiness, weight), data analytics and ability to walk up inclines or steps, among many others, have the potential to be meaningful and competitive differentiators.

ARKE GEN2, Bionik's second generation (lighter, more control, improved electronics) machine is currently undergoing assembly and testing and is anticipated to be evaluated by select Canadian rehabilitation centers throughout 2016. If all goes to-plan, data could be available later this year, filings in Canada and Europe would follow and initial commercialization in those areas could potentially happen sometime in 2017. The U.S. is a longer-term goal. FDA recently reclassified exoskeletons as Class II devices with special controls which will require formal clinical studies to demonstrate safety and patients' ability to use the device.

And while ARKE is BNKL's current main focus, the company has other irons in the fire. In early March they announced the planned acquisition of Interactive Motion Technologies (IMT), a leading innovator of neurorehabilitation robotics. IMT's robotics portfolio, developed at Massachusetts Institute of Technology, currently includes three FDA-approved upper extremity rehabilitation devices as well as two lower body product candidates. IMT, which notes that their robots "are the most thoroughly research technology available in the rehabilitation industry", currently generates approximately $2M in annual sales. The acquisition, expected to close in April (IMT shareholders will receive 23.7M BNKL shares) will provide BNKL with an immediate revenue stream, but more importantly a synergistic product portfolio and technology platform as well as key personnel additions.

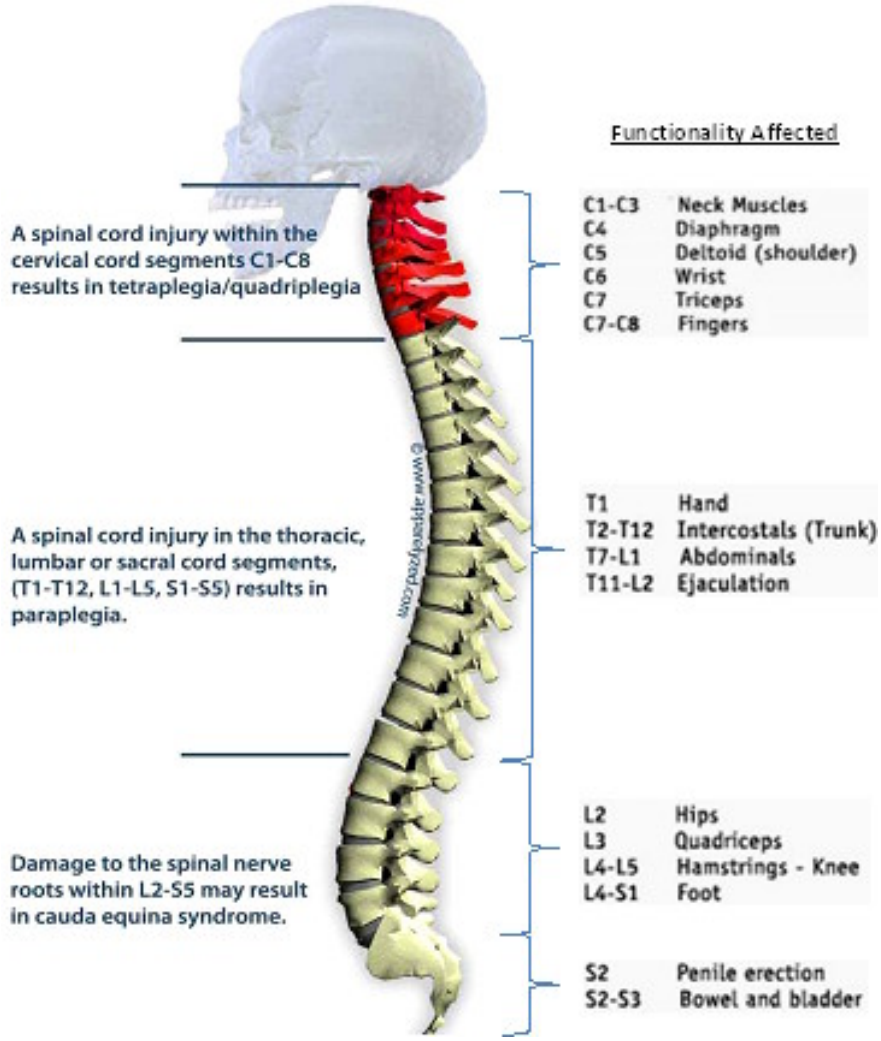
BACKGROUND

Spinal Cord Injuries

It is believed that there are between 270k and 1.3 million Americans living with some form of spinal cord injury. The most common causes are motor vehicle accidents, work-related accidents and injuries caused while participating in sporting or recreational activities. Many people that suffer an SCI will be permanently disabled, may require life-long mobility assistance and undergo regular physical and rehabilitation therapy.

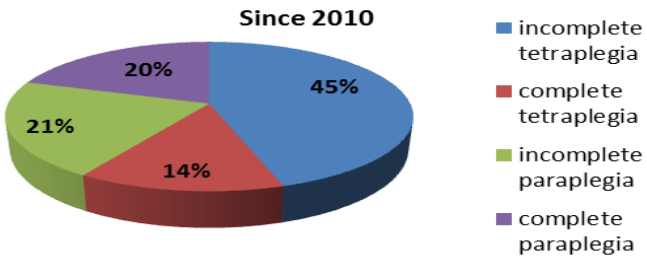
When the spinal cord is damaged messages that travel from the area below the level of the lesion (i.e. injury) through sensory pathways to the brain will be impeded or completed blocked at the location of the injury as will motor messages traveling in the opposite direction. Nerves above the injury level will be unaffected and will continue function as normal.

Spinal cord injuries are categorized by their location and severity. An incomplete injury is one where the individual retains some sensation and function below the area of the injury while a complete injury results in total paralysis below the lesion. Incomplete injuries are further classified by the position of the injury on the spinal cord which can determine the types of functionality and sensation that are lost and retained. These include four categories; Anterior Cord Syndrome, Central Cord Syndrome, Posterior Cord Syndrome and Brown-Sequard Syndrome. While we will not explain each, it is relevant in the context of this report to understand that not all incomplete SCIs are similar with some affording the individual much more function and sensation than others.



In terms of the major classification of SCIs, there is tetraplegia and paraplegia and complete and incomplete injuries of both:

- **tetraplegia**, also known as quadriplegia, is when the injury occurs at the top section of the spine, C1-C8 (see diagram above, source: *Apparelyzed and christopherreeve.org*)
    - per the Foundation for Spinal Cord Injury, Prevention, Care & Cure (FSCIP), incomplete tetraplegia accounts for approximately 45% of SCIs
    - complete tetraplegia accounts for approximately 14% of SCIs
- **paraplegia** is when the injury occurs below C8
    - incomplete paraplegia accounts for approximately 21% of SCIs
    - complete paraplegia accounts for approximately 20% of SCIs



SCI-Associated Health Complications and Costs…

In addition to the obvious medical complications and compromise to quality of life immediately following an SCI, there are other health-related risks that commonly arise over time as a result of reduced mobility and changes to way the body functions.

SCI-related complications include: loss of bladder control, urinary tract infections, renal failure, blood clots, autonomic dysreflexia, pressure sores, respiratory problems (difficulty breathing and coughing), pneumonia, muscle atrophy and spasticity, bone loss and emotional problems (depression, feelings of helplessness), among others.

For those patients with incomplete injuries at C7 and lower (i.e.– that have normal movement of shoulders and can extend their arms) rehabilitation therapy, such as gait-training on a treadmill or walking with the help of parallel bars and/or special orthotics (such as Reciprocating Gait Orthosis) is often used to try and mitigate the risk of many of these complications. Exoskeleton therapy provides the additional benefits of independent mobility (psychological as well as utilitarian benefits) and the ability to potentially induce more targeted effort on the part of the patient which may accelerate therapeutic gains in areas such as bone density, pain reduction, bowel/bladder function and others – which we explain in more detail later.

These complications contribute to a very high rehospitalization rate of SCI patients. According to the Model Spinal Cord Injury Systems Database, 55% of patients in the first year following the SCI incident were readmitted to the hospital and after the first year the rate moved to about 37% where it remained roughly stable for the next 20 years. Life expectancy is also shorter and related to the severity of the injury and motor functionality (which is a proxy for health risks).

High tetraplegia, in the chart below, is defined by the ASIA Impairment Scale as an injury in C1-C4 which essentially affects the entire body below the head including the neck muscles and diaphragm. Christopher Reeve's suffered a high tetra injury above C3. Low tetraplegia is in C5-C8 and affects everything below the neck muscles and diaphragm.

Life expectancy (years) for post-injury by severity of injury and age at injury											
	For persons who survive the first 24 hours						For persons surviving at least 1 year post-injury				
Age at Injury	No SCI	AIS D—Motor Functional at Any Level	Para	Low Tetra (C5–C8)	High Tetra (C1–C4)	Ventilator Dependent Any Level	AIS D—Motor Functional at Any Level	Para	Low Tetra (C5–C8)	High Tetra (C1–C4)	Ventilator Dependent- Any Level
20	59.3	52.6	45.0	39.9	35.6	19.2	53.0	45.5	40.6	36.9	25.3
40	40.4	34.2	27.6	23.3	19.9	8.7	34.6	28.0	23.9	20.9	12.4
60	23.0	18.0	13.0	10.1	8.0	2.1	18.2	13.3	10.5	8.6	3.9

SOURCE: National Spinal Cord Injury Statistical Center (NSCISC)

According to NCISC and based on statistics from the National SCI Database (established in 1973), pneumomia and septicemia (i.e. sepsis) have had the most significant impact on life expectancy of SCI patients. And while death rates due to cancer, heart disease, stroke, arterial diseases, pulmonary embolus, urinary and digestive diseases, and suicide have fallen over the last 40 years, life expectancy has remained fairly stable over the last several decades due to an increase in mortality from endocrine, metabolic and nutritional diseases, accidents, nervous system diseases, musculoskeletal disorders and mental disorders.

Treatment of the acute and chronic symptoms of SCI and related high rehospitalization rates are costly and, similar to life expectancy, are directly related and positively correlated to the severity of the injury. A study, *Economic Impact of SCI*, published in the journal Topics in Spinal Cord Injury Rehabilitation in 2011, estimated that lifetime treatment and living expenses amount to between $1.6M and $4.7M (depending on the severity of the injury) for someone injured at the age of 25 (chart below).

In addition, according to the NSCISC, by developing therapies for those who are already spinal cord injured and preventing new injuries, the U.S. would save as much as $400B on future direct and indirect SCI lifetime costs.

	Average Yearly Expenses (in 2014 dollars)		Estimated Lifetime Costs by Age At Injury (discounted at 2%)	
Severity of Injury	First Year	Each Subsequent Year	25 years old	50 years old
High Tetraplegia (C1–C4) AIS ABC	$1,064,716	$184,891	$4,724,181	$2,596,329
Low Tetraplegia (C5–C8) AIS ABC	$769,351	$113,423	$3,451,781	$2,123,154
Paraplegia AIS ABC	$518,904	$68,739	$2,310,104	$1,516,052
Motor Functional at Any Level AIS D	$347,484	$42,206	$1,578,274	$1,113,990

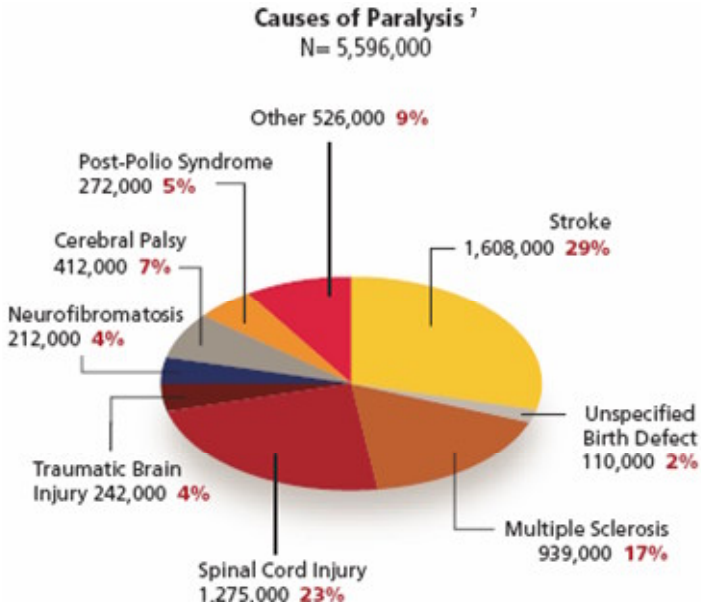
SCI Prevalence / Incidence…

There have not been recent U.S. incidence studies so statistics on the number of people with spinal cord injuries is unknown and, depending on the source, the figures can vary widely. The National Spinal Cord Injury Statistical Center estimates that every year approximately 40 per one million people, or ~12.5k, suffer a spinal cord injury – this figure excludes those that die at the scene. They estimate U.S. prevalence at about 270k people. However, statistics from the Christopher Reeve Foundation, which claims that there are over one million more people in the U.S. living with paralysis than previously thought, indicates that there are almost 1.3M Americans with SCI (i.e. ~5x the NSCISC figure).

We have been unable to find SCI statistics for other territories where Bionik expects to eventually market ARKE (Europe and Canada) although if we apply the U.S. rates, Canadian prevalence could be as high as 150k people and the most marketable countries (i.e. most developed medical device markets) in Europe (UK, Germany, France, Italy, Spain, Netherlands, Denmark, Belgium and Portugal), which aggregate to a total population of ~370M people, could have a combined SCI market slightly larger than that of the U.S.

Other Causes of Paralysis

According to the Christopher Reeve Foundation paralysis, or loss of voluntary muscle movement, encompasses a population of approximately 5.6M people in the U.S. And while most people probably think of SCI when they think of paralysis, the most common cause is actually stroke. Other common causes include multiple sclerosis, cerebral palsy and traumatic brain injury. We provide additional detail on some of these…



SOURCE: christopherreeve.org

- **Stroke**: there are about 1.6M Americans that have been paralyzed from a stroke, accounting for approximately 29% of all paralysis cases. Strokes occur when the brain is deprived of blood and oxygen due to a circulatory obstruction (ischemic stroke) or from rupture of a blood vessel in the brain (hemorrhagic), causing brain cells to die. Injury to the brain can lead to a variety of impairments including to speech and cognition as well as result in paralysis. Paralysis from stroke is usually confined to one side of the body (hemiplegia) and may affect the entire side of the body or just portions – such as the face, arm/hand or leg. Approximately 80% of stroke survivors suffer from hemiplegia, many of which will require the use of ambulatory aids. For more mild cases this may be a cane or walker. For severe cases this may include wheelchairs; conventional manual, hemiplegic manual or electrical. And while 65% to 85% of stroke survivors will learn to walk without the use of ambulatory aids within 6 months, gait abnormalities may persist indefinitely. Studies have found that practicing walking is the activity that consumes the most time in rehabilitation among stroke victims.[1] And time spent walking is time well spent as a separate study revealed that the ability to walk (400 meters) for stroke victims is a predictor of mortality and cardiovascular disease.[2]
- **Multiple Sclerosis**: there are about 940k Americans that have been paralyzed due to MS, accounting for approximately 17% of all paralysis cases. MS is a chronic disease which can be debilitating and one with no cure. In people with MS the body attacks myelin (which surrounds the spinal cord), disrupting nerve impulse transmission. Symptoms can range from somewhat benign to severe, the latter which may include cognition problems, loss of vision and paralysis. While fatigue is very common in almost all MS sufferers, other symptoms and their severity can be highly variable from person to person. MS attacks can come and go in cycles but often becomes progressively worse. Symptom management may include some type of physical therapy to address fatigue and physical deterioration including muscle loss. Approximately 65% of MS sufferers never lose the ability to walk as a result of the disease and 75% never use a wheelchair. There are about 10k new cases of MS diagnosed each year in the U.S. and approximately 400k Americans currently living with the disease.
- **Cerebral Palsy**: there are about 400k Americans that have been paralyzed due to Cerebral Palsy, accounting for approximately 7% of all paralysis cases. Unlike SCI or MS, Cerebral Palsy is not due to damage or deterioration in the spinal cord but is instead a result of inadequate development or damage to areas of the brain that are responsible for movement and posture. CP appears very early in life – usually during pregnancy or childbirth and is the most common movement disorder in children, occurring in ~2.1 of every 1,000 births. Symptoms vary from mild to severe and can include tremors, muscle weakness and paralysis. The name Cerebral Palsy comes from the German term zerebrale Kinderlähmung, translated as "cerebral child-paralysis". There are currently about 500k Americans that have some symptoms of CP with ~8k babies diagnosed with the disorder in the U.S. every year. A study (n=95k) published in the journal

[1] Latham NK, Jette DU, Slavin M, et al. Physical therapy during stroke rehabilitation for people with different walking abilities. Arch Phys Med Rehabil. 2005;86(12 Suppl 2):S41–S50.
[2] Gill TM, Gahbauer EA, Allore HG, Han L. Transitions between frailty states among community-living older persons. Arch Intern Med. 2006;166(4):418–423

JAMA Pediatrics found that 31% of children with CP required the use of special equipment such as walkers or wheelchairs.[3]

- **Traumatic Brain Injury**: there are about 240k Americans that have been paralyzed due to TBI, accounting for approximately 4% of all paralysis cases. While TBI has recently been in the headlines due to head injuries suffered by professional athletes as well as soldiers, the majority of occurrences are from falls (35%) and auto accidents (17%). According to CDC an estimated 1.7M people annually in the U.S. sustain a TBI and ~5.3M have some form of TBI-related disability. Symptoms of TBI can vary from mild to severe and can include memory and cognition problems, behavioral problems, headaches, depression, neurological damage, paralysis and a permanent vegetative state. Our research has not been able to uncover statistics on the percentage of TBI sufferers that use (or have enough function to use) a wheelchair (and therefore may be candidates for exoskeletons). Certainly a portion of the ~240k TBI-related paralysis victims would be candidates although others, with insufficient functionality or strength, would not.

Bionik

ARKE is now in its second generation (shown below) which has a new design, improved walking gait trajectories and much smaller mechanics and actuator components. ARKE incorporates an intelligent positioning system, using information gathered from sensors located throughout the device to determine (based on weight shift or bending) the movement required by the user. Built of carbon fiber and aluminum (as well as steel) to maximize the weight-to-strength ratio, this second generation machine also has (per BNKL) "the highest possible energy and efficiency through both improved battery density and the power-to-weight ratio of the actuators. ARKE utilizes Bionik's proprietary transmission and actuation system, one of the most powerful robotic devices as compared to similar systems". The machine was designed for seamless upgrade to future next-gen versions by using modular electronic components.

ARKE



SOURCE: bioniklabs.com

Bionik views their machine as much more than something that just helps someone stand, walk or improve blood flow and mobility. They have built ARKE to do all of that but, perhaps just as importantly, to also provide real-time feedback and data analytics to help clinicians make more informed treatment decisions. Sensors attached at various points on the device will (i.e. once development is completed) provide

[3] Boulet S. et al. Health Care Use and Health and Functional Impact of Development Disabilities Among U.S. Children, 1997-2005. *Arch Pediatr Adolesc Med.* 2009;163(1):19-26. doi:10.1001/archpediatrics.2008.506

information on gait, strength and positioning, among other metrics, which will be aggregated, stored in the cloud and analyzed with the help of IBM's (NYSE: IBM) data analytics software which was designed together with Bionik. The data collection, cloud storage and data analytics functionality are still under development and will be incorporated into the ARKE-2 system (current model).

The software incorporated into ARKE is highly complex and despite the Bionik team's technology capabilities, was too complicated to develop in-house – thus the collaboration with IBM. The advantage of the software as compared to conventional paper and chart record-keeping is much more than just convenience, although that is one advantage. The company believes that the additional functionality made possible by the software as well as relatively simple programming through a data interface are major differentiators between ARKE and other medical exoskeletons on the market. This is in addition to what they expect to be a significantly lower selling price than competing devices.

The target market for ARKE includes wheelchair-bound patients suffering from SCI, stroke and other conditions with limited lower-body mobility. Initially BNKL will focus on SCI injuries treated at rehabilitation institutions (as opposed to home-use) for use as a complement or replacement for current rehabilitation methods and devices such as body-weight supported treadmill training, intensive mobility training and neurodevelopment techniques. Other upgrades to ARKE could include partial-assist functionality (which allows for patients to contribute their own power) as well as follow-on indications in other conditions including stroke and TBI.

The goal in the rehab clinic segment is to improve the patient's mobility and health. The focus is on areas such as increasing the individual's range of motion, improving blood flow, slowing muscle and bone density loss, helping bowel/bladder function and mitigating risk of other common health-related complications of mobility-impaired individuals (discussed earlier) such as blood clots and respiratory problems. This could have the effect of reducing the high rate of rehospitalization, reduce total cost of therapy and, most importantly, improve and extend quality of life.

Intellectual Property…

Bionik's intellectual property includes five U.S. and international patents pending and thirteen U.S. provisional patents.

Area Of IP	Status	Filing Year
Algorithms & Control Systems	Filed US & International	2012
Sensory Technology	Filed US & International	2012
Robotics	Filed US & International	2012
Robotics	Filed US & International	2012
Robotics	Filed US & International	2012
Robotics	US Provisional	2014
Cloud Computing	US Provisional	2014
Cloud Computing	US Provisional	2014
Robotics	US Provisional	2014
Robotics	US Provisional	2014
Robotics	US Provisional	2014
Algorithms & Control Systems	US Provisional	2014
Algorithms & Control Systems	US Provisional	2014
Sensory Technology	US Provisional	2014
Algorithms & Control Systems	US Provisional	2014
Robotics	US Provisional	2014
Robotics	US Provisional	2014
Algorithms & Control Systems	US Provisional	2014
Energy	US Provisional	2014

SOURCE: bioniklabs.com

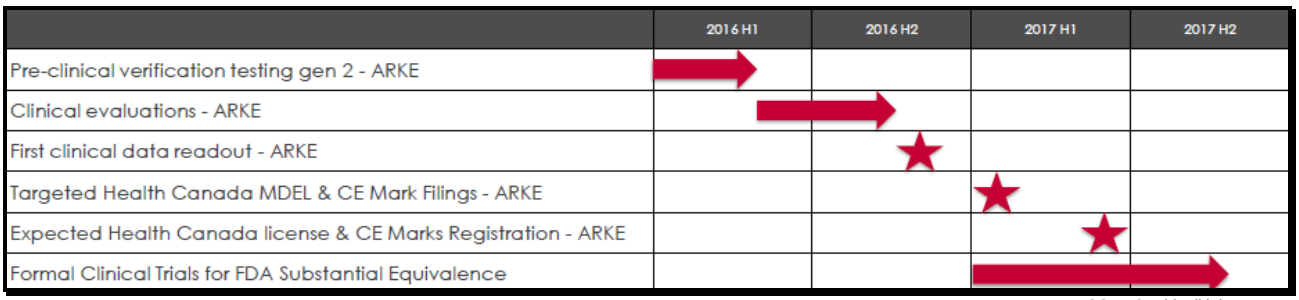
ARKE Regulatory Timelines…

Since the company's founding in 2011 they have been awarded ~$5.5M in grants and Canadian government tax credits (supporting technologies aimed at lowering medical costs). Development has proceeded swiftly with this second-generation model now undergoing pre-clinical validation (assembly and testing), which (per the company's current timeline) is expected to be completed during the first half of this year.

ARKE will be classified as a Class I device in Canada and Class IIa in Europe. Requirements for CE Marking for low-to-moderate risk medical devices generally relate to the manufacturer self-certifying that the device meets certain production and quality controls and includes a technical document. And similarly, Health Canada is an informational filing which also is unlikely to require significant clinical data. Once the requisite information is compiled and submitted, clearance to market the device in Europe and Canada could come shortly afterwards.

Clinical evaluations, to demonstrate that a patient can operate the system, will follow the ongoing pre-clinical validation. BNKL's most recent communication regarding expected timelines (March 23, 2016 Update) notes that they anticipate validation to continue through 2016 and hope to file for both Health Canada approval and CE Marking in 1H 2017. If these timelines are met, commercialization in Canada and Europe could initiate as soon as late-2017.

BNKL's Current Anticipated Regulatory Timelines



SOURCE: bioniklabs.com

The U.S. regulatory pathway will almost certainly be more rigorous than Canada and Europe. In February 2015 FDA announced that all powered lower body exoskeletons will be classified as Class II devices and required to meet special controls. The order became effective the following month. The reclassification was prompted by ReWalk Robotics which petitioned the FDA to regulate exoskeletons and classify them as Class II devices. ReWalk's device was the first exoskeleton approved by FDA. As there was no predicate, ReWalk was allowed to use the de novo pathway. ReWalk received FDA clearance in June 2014 for home use (SCI injuries between T7 and L5) and rehabilitation institutions (SCI injuries as high as T4).

The special controls (full list here http://1.usa.gov/1I3SXji) includes testing to demonstrate that it performs as intended and is safe. So BNKL will need to perform clinical studies to support an FDA filing demonstrating that ARKE meets all of these special controls. The expectation is that this will be a 510(k) submission and list ReWalk Rehabilitation as the predicate device. The game plan for the U.S. is to gain approval in the least arduous indication and after commercialized, look to potentially expand the label. BNKL has indicated that they will pursue SCI for ambulation in the rehabilitation setting as the initial indication. Longer-term, they may look to expand the label to include use in other conditions such as stroke, MS and TBI, and to seek approval for the home use setting.

The company has not specified what they anticipate in terms of the scope of U.S. trials although we can use ReWalk's studies supporting their FDA submission as a potential proxy. ReWalk performed three single-arm clinical studies which, in aggregate, included 35 patients who finished the studies. Inclusion criteria in two of the studies were individuals with injury locations at C7-C8 or T1-T12. The third study included only injuries at T1-T12. All three studies included individuals with neurological injuries due to SCI.

- **Studies 1 (n=6) and 2 (n=22):**
  - Primary endpoints: 10 meter walk test (10MWT), 6 minute walk test (6MWT)
  - Secondary endpoint: spasticity as measured by Ashworth scale
  - Methods: 16-24 sessions (~8 weeks) of 60-90 minutes was provided for training on use of the device. Subjects then performed the 10 and 6 meter walk tests. Study 1 (single site) was done on a smooth surface and concrete while Study 2 (2 sites) was done on a larger variety of surfaces which also included carpet and grass as well as some subjects ambulating up and down a ramp and curb cutouts
  - Results:
    - Study 1: 6 patients ambulated 10 to 79 meters in the 6MWT. In the 10MWT these 6 patients ambulated 10 meters in 40 to 163 seconds. Four of the patients recorded no average change in average Ashworth score, while two had a decrease in average score.

Skin lesions and falls were also recorded: 3 patients had a combined 13 lesions, no falls were reported

- Study 2: 20 patients ambulated from 0 to 100+ meters in the 6MWT. In the 10MWT 22 patients ambulated 10 meters in 10 to 100+ seconds. 13 subjects recorded an Ashworth score: 8 had no average change, one had an increase and 4 a decrease. Skin tears; six incidents in five subjects. No falls reported

- **Study 3 (n=7):**
  - Primary endpoint: 10MWT, 6MWT and pivot turns
  - Secondary endpoint: arresting on gait command, maneuvering to a wall rest, walking on carpet, navigating a push button electric door, navigating a revolving door, outdoor ambulation and stairs.
  - Results: 6MWT: ambulated from 51 to 166 meters in 6 minutes. 10MWT: ambulated 10 meters in 20 to 62 seconds. Three of the seven had mild skin abrasions and two of seven had moderate abrasions. No falls reported.

Initiation of U.S Regulatory Program Dependent On First Raising Additional Capital…

ReWalk's Study 1 is most consistent with the conditions of what would be expected in the rehabilitation institution setting as ambulation was only done on smooth surface and concrete. By contrast, Studies 2 and 3 were performed on other surfaces and conditions that are more likely to be encountered in a less controlled environment such as the home. As BNKL will initially only pursue clearance for the rehabilitation setting, the requisite clinical support may be just a small (i.e. $n \leq 10$) single-arm, single-site study demonstrating that subjects can use the device as intended which, by default, may be the 6MWT and 10MWT tests.

Timing for start of the U.S. regulatory program will depend on BNKL first raising additional capital (while their most recent investor presentation [March 2016] implies an early-2017 start date, this assumes requisite capital has been raised). A general guide on what to expect in terms of how long a U.S. program may take can be gleaned from ReWalk's experience. The 6-patient ReWalk study spanned about 11 months from start to finish. If we assume a similar timeframe, ballpark about 6 months for study design and site preparation, 6 months for final data analysis, preparation of the filing (including aggregating all other special controls information) and FDA submission and another 6 months for turnaround of FDA clearance, BNKL could be looking at ~2.5 years from initiation to FDA approval. But this is hypothetical until (at the very least) there is more clarity on what to expect in terms of U.S. studies and, in the more near-term, if and when BNKL will even pursue the U.S. market (which, again, will not happen prior to raising additional capital).

Assuming eventual FDA clearance, BNKL would likely be required to conduct a post-marketing study, as ReWalk did. The post-marketing study collects data on rates of adverse events from real-world use during initial commercialization to ensure that the device can be used safely.

R&D Pipeline…

Following securing an initial indication in SCI-related paraplegic rehabilitation, BNKL's current outlook is that they will look to expand ARKE's label to include rehabilitative use for other conditions including stroke and TBI. The plan is that the next-generation model (i.e. "ARKE 3"), a variable assist product which will incorporate hemiplegic functionality in which only one side (i.e. leg) of the device provides assistance, will target the stroke market. Upgrades to add more functionality for TBI, among others including MS and CP, could follow.

Interactive Motion Technologies: BNKL has other irons in the fire. In early March they announced the planned acquisition of Interactive Motion Technologies, a leading innovator of neurorehabilitation robotics. IMT's robotics portfolio, developed at Massachusetts Institute of Technology, currently includes three FDA-approved upper extremity rehabilitation devices as well as two lower body product candidates. IMT, which notes that their robots "are the most thoroughly research technology available in the rehabilitation industry", currently generates approximately $2M in annual sales. The acquisition, expected to close in April (IMT shareholders will receive 23.7M BNKL shares) will provide BNKL with an immediate revenue stream, but more importantly a synergistic product portfolio and technology platform as well as key personnel additions.

Boston-based Interactive Motion Technologies is a thought and technology leader in rehabilitation robotics. The company has working partnerships with the Massachusetts Institute of Technology and some of the leading rehabilitation experts around the world. Their InMotion upper body rehabilitation robots have been validated through dozens of controlled clinical studies, including large randomized clinical trials.

The technology was designed around the latest neuroscience research including motor learning and memory. InMotion robots receive patient movement feedback from sensors and then respond according to the individuals' abilities by guiding an appropriate exercise therapy. As a patient's mobility improves, the robots automatically respond by providing less assistance, ensuring the individual continues to employ effort which furthers the rehabilitation gains. The robots also have a form of variable assist functionality which helps an otherwise immobile patient to initiate movement. Clinicians are able to track patients' progress from quantifiable feedback.

Bionik noted in the March press release announcing the intended acquisition that they had been searching throughout 2015 for "the right opportunities to execute on our growth strategy". Clearly IMT's product portfolio offers synergies with that of ARKE, the most obvious of which is that sales channels and customer call points (i.e. rehabilitation hospitals and clinics) are similar. But also, Bionik almost certainly viewed the potential to leverage IMT's knowledge and technology in further development of ARKE as an important consideration. Expected future upgrades to ARKE include data feedback and variable assist – similar features which are incorporated into the InMotion robots. And while upgrades to ARKE may be on a different platform, IMT's expertise in the field should be an asset in facilitating further development of Bioniks' exoskeletons. In addition, IMT's U.S.-based manufacturing facility is FDA-compliant, which presumably could be used in manufacturing of ARKE.

Following close of the deal, Bionik will retain IMT's office in Massachusetts and IMT's team will be integrated with that of Bionik's. This includes Hermano Krebs, a co-founder of IMT who is also a principal research scientist at MIT's Newman Laboratory for Biomechanics and Human Rehabilitation. Dr. Krebs is considered one of the top thought-leaders in robotic rehabilitation and has published extensively on the subject. Dr. Krebs will assume the role of Chief Science Officer of Bionik. Dr. Neville Hogan, currently an IMT board member will be retained as an advisor to Bionik. Dr. Hogan is also a professor at MIT's Newman Laboratory for Biomechanics and Human Rehabilitation. Dr. Hogan's research is focused on neuroscience, rehabilitation and robotics. IMT's current CEO, Jules Fried, is expected to be assume the position of VP of Bioniks' U.S. operations.

IMT's currently commercialized products are FDA-approved and sold in over 20 countries, including the U.S.. They generated approximately $2M of revenue in 2015 and include;

- **InMotion ARM**: designed for rehabilitation of individuals with upper extremity neurological limitations. IMT notes that ARM is "the most thoroughly research device for upper extremity neurorehabilitation". It has been used by over 1k patients and completed clinical studies for stroke, cerebral palsy and traumatic brain injury.
- **InMotion WRIST**: for wrist rehabilitation which can help patients overcome most forms of hypertonicity (i.e. extreme muscular or arterial tension). Has a range of motion of a normal wrist doing typical, everyday-types of tasks. InMotion WRIST can be used either in isolation or in addition to InMotion ARM.
- **InMotion HAND**: an add-on to InMotion ARM which provides rehabilitation specifically to the hand. Incorporates assist-as-needed (i.e. similar to variable assist) functionality for grasp and release training and rehabilitation.

ARM **WRIST** **HAND**



SOURCE: Interactive Motion Technologies

In addition to these three already commercialized products, IMT has a lower body product which is currently available for research use called InMotion ANKLE as well as a device being developed at MIT for gait training.

Exoskeleton Market

In addition to medical applications, exoskeletons have also been designed for military and industrial use in order to provide for greater endurance and strength of able-bodied individuals. As Bionik is focused solely on the medical market, we confine our market and competition commentary to this segment.

The medical market for powered exoskeletons is still very much in its infancy. ReWalk was one of the first exoskeletons to market, introduced in the U.S. in 2011 and the only one with FDA clearance for use in both the rehabilitation and home setting. It was CE Marked in 2010. ReWalk is already in its sixth generation model. There are also a handful of other exoskeleton manufacturers with commercialized devices and many more with ongoing development programs – we discuss some of these in greater detail later.

The only-recent introduction of these devices, combined with less-than-robust rates of adoption and a less-than-favorable reimbursement environment in most countries (Japan may be somewhat of an exception) has meant that saturation is not an issue. So the market, which industry research firm Research and Markets predicts will grow from approximately $17M in 2014 to $2.1B by 2021 (a portion of which also relates to non-medical use), for exoskeletons is not only virtually untapped today but ripe for significant growth with evolving positive fundamentals. We discuss what we believe are some of the most relevant aspects of the market.

- **Expanding Indications Beyond SCI**

  Prevalence of SCI-related paraplegia is (depending on the source) anywhere between approximately 100k and 500k in the U.S. and up to another ~700k in the other areas of the world (Canada and parts of Europe) where BNKL may establish a commercial footprint. And while significant, the size of the SCI market pales in comparison to the aggregate population of other conditions that may also be effectively addressed with exoskeletons. This includes individuals that have been paralyzed due to stroke (1.6M U.S. prevalence), MS (940k U.S. prevalence), Cerebral Palsy (400k U.S. prevalence) and TBI (240k U.S. prevalence).

  The next horizon for exoskeletons is beyond SCI. Hemiplegic functionality for stroke victims as well as partial or variable assist (which will be incorporated into ARKE3), which allows the patient to provide some of his own effort, are some of the newer features of exoskeletons which are beginning to broaden the scope of applications beyond the SCI indication. In April 2016 Ekso GT became the first exoskeleton to receive FDA clearance for use with individuals with hemiplegia due to stroke. And further advancements in functionality should facilitate greater inroads towards expanding labels which will afford access to much bigger markets and potentially help speed a transition of exoskeletons from the novel rehabilitation devices that they are today to, perhaps, mainstream everyday mobility aids in the future.

	Estimated Market Size ('000s)			
Condition	**U.S.**	**Europe[1]**	**Canada**	**Total**
SCI	500	600	100	**1,200**
Stroke	1,600	1,850	320	**3,770**
MS	940	1,100	200	**2,240**
CP	400	460	80	**940**
TBI	240	300	50	**590**
Total	**3,680**	**4,310**	**750**	**8,740**

[1] Includes only UK, GER, FRA, ITA, ESP, DEN, BEL, POR

- **Evolving Technology**

  The first exoskeleton didn't enter the U.S. market until 2011. While revolutionary in many ways, today's exoskeleton technology is still unrefined but has the potential to evolve very rapidly. With continued investment, today's models could soon evoke memories of the old brick cell phones; incredibly expensive (~$4k in 1984), too big, too heavy and unwieldy, slow, cumbersome and all-but impractical (10hrs to charge for 30min talk time). Few would say the same about today's smart phones.

  The exponential speed that technology is evolving in areas such as microprocessor speed, materials engineering to reduce weight-to-strength ratio, new discoveries in battery technology and improvements in sensors means that we could see consistent, significant and rapid advances in exoskeletons'

functionality, performance and ease-of-use. And as technology improves costs should decline and promote adoption – this should be particularly true if it helps facilitate more widespread reimbursement.

The speed of technological progress is an area which could have a significant effect on separating the winners / leaders from the losers / followers in the race to become the exoskeleton market leader. And while most if not all manufacturers likely realize this, some look to be preparing better than others. Modular designs, which Bionik has incorporated into ARKE (as have some others), which allows for replacing or upgrading portions of the system without a full restructuring or rebuild of the entire device, could prove to be key in this regard.

Today?



Tomorrow?



- **Home Use**

  The rehabilitation segment is a fraction of what the home-use market could be. While we have not been able to find a reliable estimate for the number of physical rehabilitation centers in the U.S., there are approximately 5,000 hospitals in America – which is likely a liberal proxy estimate for the number of rehab facilities. And if we assume each center purchases two exoskeletons, this represents a maximum U.S. rehabilitation market of 10k units. Home use, just for an SCI indication, represents a U.S. market 50x as large as the rehabilitation segment, or approximately 500k units (i.e. – estimated number of SCI-paraplegics). The other possible indications (stroke, MS, CP, TBI) represent a higher functioning (in general) population which may find utility of exoskeletons for both rehabilitation and for everyday mobility. So as technology improves to the point where exoskeletons are more practical as mobility aids, demand for the home use market would almost certainly grow. And technological improvements should also bring down costs of the devices, making them more affordable for individual purchase (as opposed to reliance on insurance reimbursement) for use at home.

- **Reimbursement**

  The lack of dedicated reimbursement for rehabilitative use or as a mobility aid is a significant headwind to adoption of these devices. Reimbursement is spotty at best, with anecdotal evidence of manufacturers having some success billing under some of the following CMS (i.e. Medicare) rehab-related codes. .

  - 97110: Therapeutic exercises to develop strength and endurance, range of motion, and flexibility
  - 97112: Neuromuscular re-education of movement, balance, coordination, kinesthetic sense, posture, and/or proprioception for sitting and/or standing activities
  - 97116: Gait training (includes stair climbing)
  - 97530: Therapeutic activities, direct (one-on-one) member contact by the provider (use of dynamic activities to improve functional performance)
  - 97750: Physical performance test or measurement (e.g., musculoskeletal, functional capacity), with written report
  - 97755: Assistive Technology Assessment Assistive Technology Assessment (eg, to restore, augment, or compensate for existing function, optimize functional tasks, and/or maximize environmental accessibility), direct one-on-one contact by provider, with written report
  - 97760: orthotic(s) management and training (including assessment and fitting when not otherwise reported), upper extremity(s), lower extremity(s), and/or trunk

  ReWalk's experience provides some insight…

  These are billed in 15 minute increments at an average rate of approximately $35. A rehabilitation session may average 30 to 90 minutes, which would equate to average reimbursement per session under these codes of approximately $140. For out-patient rehab, this may consist of 2 – 3 sessions per week. For a device that costs upwards of $80k - $100k, this level of reimbursement may not be particularly

attractive to a rehab clinic – particularly if payment has not been pre-authorized (i.e. if there is risk that the clinic does not get paid).

ReWalk has been one of the most active manufacturers engaged in improving the reimbursement picture so it is worth mentioning their experiences to provide a better understanding of the insurance-related challenges. According to their publicly available investor communications, they point to reimbursement as the most significant contributor to extending the sales cycle.

They have recently added infrastructure in billing and reimbursement and, per their Q4 earnings call, have had pending insurance claims improve from 31 in Q1 2015 to 128 at year-end. Of this 128, 61 (48%) are in Germany – which may suggest that country's policies may be somewhat more liberal. ReWalk notes that claims are paid on a case-by-case basis however, and it is not clear what the average rate is. And while they have also had some success with auto insurers, auto accidents represent a relatively small part of the SCI segment (17% of SCI are from auto accidents and clearly not all of these claims will cover exoskeletons).

In December 2015 ReWalk announced that the U.S. Department of Veterans Affairs issued a national policy which allows veterans with SCI injuries and which meet certain physical requirements to obtain a ReWalk Personal system (for home use). The coverage policy also defines exoskeletons as the standard of care for qualifying spinal cord injuries. We note that while this coverage policy only relates to ReWalk, that it is conceivable that if and when other manufacturers gain FDA approval for home use (including potentially Bionik), that similar policies may cover those systems as well.

More data could improve the reimbursement picture…

The lack of a dedicated code or otherwise widespread reimbursement is due to the fact that these are still novel devices and there is still insufficient clinical data demonstrating the benefits of exoskeletons. As such, these devices are still considered experimental by many insurers. Clinical data demonstrating benefits of these devices over conventional therapy such as improved patient outcomes (such as reduction in muscle atrophy), cost savings (overall or reduced hospitalization costs, for example) and improvements to quality of life will be key to improving the payer picture and as support for applying for a dedicated CMS code.

ReWalk has led the charge in that regard. They claim to have the most clinical data to-date of all exoskeleton manufacturers. They also have four more studies which they say will all be completed by Q3 2016. The VA is also conducting their own study – a large, multi-center 3-year study with the goal of demonstrating the benefits of exoskeleton use by SCI patients. And other manufacturers including Ekso Bionics also have studies ongoing with the goal of improving reimbursement. And while Bionik is coming later to market than others, in a case like this where there is little reimbursement and only front-end type demand, later to market can actually be a benefit, particularly if competitors are able to improve the reimbursement environment prior to Bionik's launch.

Competition

Along with Israel-based ReWalk (NASD: RWLK), there are several other companies developing exoskeletons for the medical market. Besides ReWalk, the only other product currently on the U.S. market is Ekso GT, manufactured by Ekso Bionics (OTC ADR: EKSO). Ekso, headquartered in California, is a close second with ~170 units placed (as of Q4 2015), compared to ReWalk's 211 (104 in rehab centers and 107 in-home). ReWalk and Ekso GT are also both commercialized in Europe as are devices from the Japanese company, Cyberdyne (OTC: CYBQY), and New Zealand-based Rex Bionics (LSE: RXB.L). And there are others that are in earlier stages of development but which could have products on the market within the next two years, including two other American companies; Parker Hannifin (NYSE: PH) with its Indego device and SuitX (private) which is developing a novel ultra-lightweight exoskeleton.

While there are several other companies that have ongoing exoskeleton development programs, we think the above list represents the most near-term and substantive competition that Bionik will face if ARKE launches within the next two years. We provide some more background these companies, their lead products and their respective stages of development and commercialization.

Attributes that may competitively differentiate one product from another include (not in any particular order) regulatory approval(s), indicated use(s), clinical data, size of the exoskeleton (i.e. weight, bulkiness), product design, cost, battery life, functionality and ease of use, among potential others.

Relative to cost or price, we think it is relevant to note that, based on our research, it appears that while manufacturers may list a retail price, that this is not necessarily always the selling amount. Instead selling price may vary considerably which can be dependent on the customer, end-user, reimbursement and other factors. The selling prices that we list are approximate averages of what is available in the public domain. We think selling price is relevant as a competitive differentiator and also can be generally interpreted as a proxy for COGS plus similar margin.

- **ReWalk Robotics:** We view ReWalk as the current leader in the U.S. It is the only exoskeleton approved in the U.S. for both rehabilitation (SCI injuries as high as T4) and home use (SCI injuries between T7 and L5). It is also CE Marked. ReWalk uses tilt sensors to initiate the walking movement. Per the company's Q4 2015 earnings review, they have 208 (106 personal and 102 rehab) units placed and ReWalk is used in 8 of the top 10 rehabilitation centers in the U.S. The company claims to have the most published clinical data of any manufacturer. ReWalk is active in promoting greater reimbursement and just secured national VA coverage for their device. Selling price is approximately $70k which is less than most others. ReWalk claims a walking speed up to 1.6 mph, which based on our research, looks to be the fastest among its peers. We note that walking speed may be more of a competitive differentiator for the home use segment as opposed to for rehab use.

  
  SOURCE rewalk.com

  Potential headwinds for ReWalk include that their technology may be the most antiquated despite recent introduction of the 6th generation device, sales flattened from 2014 to 2015, cash burn is significant ($25M in 2015) and gross margins are in the single digits. Their device is also bulkier than some others, including ARKE. And while RWLK was first to market, as we explained above, this may actually be more of a benefit to competitors as the resources that they have already and continue to expend on the benefits of exoskeletons and on clinical trials to support greater reimbursement could benefit all manufacturers.

- **Ekso Bionics:** As of 2015 year-end, Ekso had over 170 units placed. Their flagship device, Ekso GT, is CE Marked (2012 rehab use) and has been sold in the U.S. (rehab use) since 2012. Ekso GT had been classified as Class I 510k exempt by FDA but following the agency's reclassification of exoskeletons as Class II devices with special controls, Ekso filed for and received (on April 4, 2016) FDA clearance to market their device for individuals with hemiplegia due to stroke, for individuals with SCI at levels T4 to L5 (i.e. similar to ReWalk Rehab) and for individuals with SCI at levels T3 to C7 (i.e. more severe SCI than ReWalk's indicated use). With the FDA clearance, Ekso GT became the first exoskeleton cleared in the U.S. for use with stroke patients and for spinal cord injuries as high as C7. Probably the most compelling competitive advantage of Ekso GT is its Variable Assist functionality which allows the patient to provide some of his own effort, potentially providing additional rehabilitative benefits. Variable Assist allows for adaptive power on either leg and is what supported Ekso's FDA indication for use with stroke victims. Depending on the mode that the device is set at, movement can be activated via buttons on the crutches or walker or by the user shifting his weight. Ekso GT is only sold to the rehabilitation segment. Similar to ReWalk, Ekso GT requires the patient to be able to support his full weight with the use of crutches.

  
  SOURCE eksobionics.com

  Similar to RWLK, Ekso has a history of slim margins and large net losses with no obvious future inflection point when financial performance may improve. And while Ekso also has a revenue-generating engineering division which has much higher margins than that of their medical devices segment, the company also uses significant amounts of cash (~$18M in 2015). Ekso's medical device gross margins are also less than 10%. Ekso's device is also one of the most expensive, priced at between $90k and $150k. Ekso GT, at 51 pounds, is also heavier than others. And while certain specifications such as battery life are difficult to find reliable estimates on, from what we have been able to find Ekso's battery life may be on the shorter side.

- **Cyberdyne Inc:** Hybrid Assist Limb or HAL is CE Marked and also approved for sale in Japan for rehab use. Cyberdyne filed for de novo FDA clearance in November 2014. Japan and Germany are the company's main markets where they have established reimbursement contracts. This includes with the Public Workmen's Insurance Organization in Germany. HAL received marketing approval as a medical

device in November 2015 and the company filed for national health insurance coverage in December. If granted, this would likely significantly accelerate adoption in Japan. Cyberdyne is currently focused only on the rehab market. HAL has two medical versions, a full-body, cyborg-type, exoskeleton and a lower body exoskeleton. The company has approximately 125 units placed in Germany and Japan. HAL is unique as motion is triggered by what the company calls "bio-electric signals" – or the patient's intention to move by the brain sending signals through the skin. Cyberdyne claims that this can teach the brain how to move the legs. In contrast to most other manufacturers which sell their device outright, Cyberdyne uses a form of leasing revenue model whereby they lease it to a treatment center and then receive a portion of the fee that the center receives (from insurance or private pay) for providing therapy. Cost is approximately $4.5k upfront payment and then monthly fees of ~$1.5k or average annual cost of approximately $20k over two years. It is unclear what the status is of the FDA filing. A potentially shorter battery life could also be an issue. Cyberdyne is a big company (~$3B market cap) with several divisions including robots for industrial applications and has significantly more resources than most other manufacturers. They have also stated their intentions to expand their business in Europe, Japan and the U.S. But it is also not clear if HAL is suitable for severe SCI injuries, particularly SCI-complete injuries as the device requires the patient to initiate an intention to move to operate it. So while we think HAL could provide substantive competition, this may be mostly relegated to non-SCI indications and the company may continue to focus mostly on Germany and Japan, areas that have proven receptiveness for their device.


SOURCE cyberdyne.com


SOURCE rexbionics

- **Rex Bionics:** Rex Bionics' Rex exoskeleton is CE Marked for rehab and home use. It is also sold in the U.S. to rehabilitation centers under FDA 510k exempt status. The company is pursuing FDA clearance. Rex is unique in that it does not require the use of crutches for support. This allows it to be used with patients SCI injuries up to C4, considerably higher than what competing devices are appropriate for.

  Despite having CE Mark since 2010 Rex has placed very few units and generated less than $300k in sales to-date. The apparent cold reception may have to do, at least in part, to it being a relatively very pricey ~$150k. And while the self-supportive feature (i.e. no crutches) allows it to be used for higher SCI injuries, it adds considerably to the weight and bulkiness – at 84 pounds it is by far the heaviest. And, given that it is marketed in the U.S. under 510(k) exempt, Rex could face FDA notice to cease selling the device unless and until it receives FDA clearance. Battery life may also be an issue.


SOURCE parkerhannifin

- **Parker Hannifin:** Indego is currently under development and is available for use in the U.S. and Europe for research purposes only. Unique features include robotic assist, which is similar to Ekso's Variable Assist, and functional electrical stimulation (FES) which uses small electrical impulses to stimulate paralyzed muscles which cause them to contract and presumably improve strength. Indego is billed as being just 26 pounds which would make it one of the lightest. It is being developed to be able to be used while the patient is in a wheelchair which could be a very compelling feature and one which is not commonplace. Parker Hannifin is by far the largest of the companies that are on our competitive dashboard with $13B in sales across a variety of divisions. Their deep pockets, access to capital, potential to accelerate development and commercial infrastructure could prove a competitive headwind to all or most other manufacturers. Of potential challenges, Indego may be pricey – a WSJ article notes that it will be priced at ~$70k - $100k[4].


SOURCE usbionics.com

- **SuitX / U.S. Bionics:** The founder of U.S. Bionics previously founded Ekso Bionics. The company bills their flagship product, Phoenix, as "the world's lightest and most advanced exoskeleton." Phoenix weighs 27 pounds which would put it on-par with Indego on this metric. Phoenix has a modular design which allows the user to put on each piece which appeals to the 'ease-of-use' factor. Battery life at 4 – 8 hours may be on the longer end compared to its peers. And similar to Indego, Phoenix is small enough to be worn while in a wheelchair. Phoenix is the only exoskeleton that has a majority or sole focus on the home use market as opposed to rehab. Specifics in terms of expected selling prices are not available although a 2011 article in the San

[4] http://www.wsj.com/articles/robotic-legs-for-the-disabled-1415741232

Francisco Chronicle mentions $15k as the expected cost.[5] However, we note that we think this is mostly speculation and actual selling price, if development completes and the device is commercialized, will have to exceed cost to manufacture – which is an unknown.

So how does Bionik and ARKE stack up? Bionik is much smaller in size and with much more scant financial resources than the likes of Parker Hannifin and Cyberdyne. But on those measures is more on-par with the others that we have detailed above. As ARKE is still in the validation / testing phase there are still some unanswered questions regarding its functionality and performance which is similar to Indego and Phoenix. In terms of indicated use – Bionik has intimated that they may seek SCI up to T6, which is the market where most others are focused. ARKE will solely target the rehab market, at least initially, which is also where the bulk of the competition lies. Follow-on indications could include stroke, TBI, MS and other neuromuscular disorders as well as for home use but these will require additional functionality (such as partial assist, hemiplegia) and supportive clinical trials (as well as additional capital) and therefore could be several years off.

Bionik believes their initial competitive positioning lies with ease-of-use benefits and data functionality. They have also indicated that they may pursue a revenue-share / leasing business model as opposed to outright sale – while this differentiates BNKL from most of its peers, we have some reservations about whether or not this is feasible for BNKL and if it indeed is a benefit.

- **Ease-of-use:** ease-of-use benefits relate to the ability to program using the removable tablet interface which is designed to be more intuitive than competitors' offerings which can require significant training. The benefits of this may be more anecdotal right now but could become more clear with the upcoming clinical validation at the Canadian rehab centers.
- **Data Functionality:** data, such as information on gait, strength and positioning (among others), collected from sensors on ARKE will be analyzed with IBM's cognitive computing infrastructure and will be available in the cloud. This data will then be used to make adjustments to the mechanical parameters on ARKE, providing rehabilitation regimens customized to the specific needs of the patient. This is expected to provide more effective rehabilitation compared to the more "one-size (i.e. rehabilitation regimen) fits all" approach of most exoskeletons. While the data functionality is slated as a future upgrade, it is expected to be available with the current ARKE model.
- **Revenue-share business model:** Exoskeletons are pricey **-** ReWalk, Ekso GT, Rex and Indego are priced between ~$70k - $150k (we think the ~$15k anecdotal price for Phoenix is likely unrealistic and would place no faith that that will be realized). Bionik has indicated that they may pursue a revenue-share business and leasing model. The idea is that rehabilitation centers may not have the capital budget to purchase the device or may not want to bear the risk of underutilization and therefore will be more receptive to a leasing and revenue-share agreement. For in-patient rehab (i.e. – high utilization) Bionik envisions a monthly leasing agreement. For out-patient rehab (i.e. – lower utilization) ARKE would be provided for free or for a nominal fee and then Bionik would share in the fee paid by the patient (or insurer) for therapy. This is similar to the model that Cyberdyne uses. While a leasing model may prove to drive greater adoption than that of outright sales, leasing places most of the risk of underutilization on the manufacturer. It also could mean that the products are carried on BNKL's balance sheet as depreciable assets. This can be a drain on financial resources, particularly if utilization does not cover the cost of financing. And, in the event leasing does prove advantageous, competitors could switch to this model, potentially eliminating any competitive benefit. However, leasing may offer a point of early differentiation and facilitate early share gains and awareness-building. And it may be very do-able, even for a company of BNKL's size. Non-traditional financing such as asset-backed loans or sale-leaseback contracts may prove to be viable options.

Further enhancements to ARKE, including variable assist which are expected to be incorporated in **follow-on generations** of the system, could provide additional and greater competitive differentiation.

Investment Considerations

Is There A Feasible Market For Exoskeletons?

This is the most basic and fundamental question that needs to be addressed when considering an investment in Bionik or any other exoskeleton manufacturer. Are exoskeletons just neat inventions with no significant commercial place in the medical rehab / mobility market (similar to what the Segway is for personal transportation) or are these

[5] http://www.sfgate.com/education/article/Exoskeleton-lets-UC-Berkeley-grad-take-a-huge-step-2371372.php

a technological leap forward which will eventually replace the wheelchair and certain traditional rehab equipment and methods?

While it may still be too early to definitively answer that question, we think there are reasons to believe that these are more than just cool contraptions and do have real utility in both the rehabilitation and home-use (personal mobility) settings. In rehab, there is mounting evidence indicating that exoskeletons may provide clinical benefits incremental to those derived from traditional equipment and methods. With more participants entering the space and existing players dedicating more resources towards validating the benefits of these devices, there could be a more definitive answer to this question fairly soon.

For home-use there really is no direct legacy technology that exoskeletons can be compared against – that is, other than the wheelchair. For context on how functionally antiquated and rudimentary this legacy technology is, it is believed that the wheelchair was invented in the year 525 (i.e. almost 1,500 years ago). Of course the wheelchair has evolved since then but its basic functionality has not changed in the 15 centuries since it was initially developed.

Today's exoskeletons are too pricey and not refined enough to make any meaningful dent in the market for wheelchairs as they require too much user effort to operate for more than just brief periods and cannot reliably and consistently navigate up or over rougher terrain (such as gravel, dirt, carpet, etc) or stairs / inclines. They are still relatively clunky, slow and cumbersome and require (per FDA indicated use for ReWalk Personal) "supervision by a specially trained companion" at all times. These aren't exactly endorsements for utility, user-friendliness, autonomy or mass- appeal.

But they do already have significant advantages over wheelchairs in the home setting, not the least of which is the feeling of empowerment, allowing the user to stand upright, walk and look at others at eye-level. While maybe not intuitive to the able-bodied, these psychological benefits are potential game-changers in our opinion in providing the long-term impetus to further development of the technology until it is refined enough for everyday use.

Comments from Cole Sydnor, a 19 year-old quadriplegic who used an exoskeleton for the first time during a clinical trial, which are posted on the Christopher Reeve foundation website seems to sum up the psychological benefits in just a few short sentences. When asked, "What was it like to be upright and walk for the first time since your injury" Cole replied, "It was amazing. Some of my friends made it to Atlanta for the trial to offer their support, and I was able to stand, and actually, to look down on them. I didn't realize how much I'd grown in the past three years, and now I'm 6'3". I was able to stand up and hug my mom, which was a real tearjerker!"[6]

So while there is only a limited market for exoskeletons today (almost all of which is in the rehab setting), we have little doubt that as the technology improves and additional evidence supports the clinical and psychological benefits of the devices that this market will rapidly expand and one day begin to replace the market for wheelchairs.

First-to-Market Not Always Advantageous

While being first to market can be a tremendous advantage for products that are already well refined and for which there exists significant demand, that may not be the case for relatively under-developed novel technologies targeting an immature market. ReWalk, Ekso and other industry pioneers that were early to get a product commercialized have helped pave the way for the medical exoskeleton class of products by building awareness of the benefits of the devices, generating clinical evidence via numerous studies and laying initial groundwork for insurance reimbursement. These early products were also in a sense the 'guinea pigs', helping to determine what worked, what did not, where improvements were needed and provided somewhat of a litmus test of the overall viability of the segment.

So Bionik being a follower rather than a leader to market could be an advantage. They did not have to spend the trial-and-error type of resources that ReWalk and Ekso may have had to in product refinement and certainly should benefit from the clinical data that has already been produced and financed by these earlier entrants. One obvious recent testament to the benefits of this is the national coverage policy announced by the VA - while this only relates to ReWalk, it is conceivable that if and when other manufacturers gain FDA approval for home use (including potentially Bionik), that similar coverage policies may apply to those systems as well. We think this action by the VA also provides additional credence to the long-term viability of exoskeletons as an eventual replacement of wheelchairs.

Dedicated and widespread insurance reimbursement (CMS and private payers) is unlikely to materialize in the U.S. without substantially more evidence related to specific indications (such as lower rate of bone loss or muscle atrophy, improved bowel function, etc) and BNKL should benefit from others' efforts in this regard as well. By the time ARKE launches in the U.S. (assuming it does), the reimbursement picture could be substantively improved.

[6] Emerging Technologies: Quad Walks with the Help of Robotic Exoskeleton
http://www.christopherreeve.org/site/c.mtKZKgMWKwG/b.9199637/k.FA83/Emerging_Technologies_Robotic_Exoskeleton.htm

Competition: *Price Could Be Paramount in Rehab, Home-Use More Discerning on Features/Function…*

The rehab segment, where a patient will use the device for only relatively very short periods of time (30 – 60 mins) and as little as one to two times per week (although more often for in-patient) may be less discerning in terms of total functionality and performance than that of the home setting. In today's market where reimbursement is scant, price may be paramount in a hospital or clinic's decision-making process regarding which manufacturers they engage. ARKE is expected to enter the market with some less functionality (such as variable assist and FES) than other devices but is also expected to more effectively address the cost constraints of the market via a leasing/revenue share model. And Bionik is positioning ARKE as being more user friendly for the rehab staff in terms of programming, which could prove to be a more important feature than things such as FES, the benefits of which are debatable. As such, we think ARKE does look attractive for the rehab setting for SCI. As Ekso is the only exoskeleton with variable assist technology and which recently received FDA clearance in the rehabilitation setting for use with individuals with hemiplegia due to stroke, they may have an early advantage in the (relatively large) stroke segment (although as we explain below, we question the sustainability of their business model).

Feature and functionality-rich may be the name of the game for home-use, however. The market is still immature but as it evolves the cream of the crop should eventually rise to the top. While ReWalk leads in terms of the size of the installed base, that may have more to do with them being first to market (and the only device approved in the U.S. for home use) than anything necessarily related to attractiveness of their device. Over the long-term we expect market share wars in the home segment to be waged using weapons such as differences in functionality, usability, performance and cost, among others. As we alluded to earlier, the relative effectiveness of these weapons will be determined by the speed of innovation among the various participant(s). Those manufacturers that can lead the technological transformation from the brick cell phone (i.e. today's exoskeleton models) to the flip phone and eventually to the smart phone (and patent the technology along the way) should find themselves towards the front of the pack.

The ultimate goal will be to develop a device that is capable of replacing the wheelchair. While not likely to happen in the near-term, or possibly not for a decade or more, we think the writing is on the wall that it will be a reality one day. For that to happen exoskeleton technology will need to evolve where these devices can be worn for extended periods of time (requires comfort, does not drain energy of the user, long battery life, can be worn while sitting) are able to navigate different types of terrain, are affordable and provide the user with independence.

Market Should Be Capable of Sustaining Several Players

There are ~3.3M wheelchairs in use in the U.S. and about the same number in Canada and Europe, combined. This could be a very big and attractive market. If we assume that just 10% of wheelchair users would be candidates for exoskeletons, the market could be worth $35B ($50k/unit x 7M units x10%) or more. A ballpark estimate for the aggregate rehab market for exoskeletons in the U.S., Europe and Canada is $1.1B (11k hospitals x 2 units each x $50k/unit).

We think it is reasonable to assume that, like with most products and in most industries, that there will be several exoskeleton manufacturers that will emerge and potentially thrive (in serving the rehab and home-use segments). Expect the industry to include niche players with smaller product lines serving more specific parts of the market along with larger companies with broader product menus. Look for differences in technology, functionality, performance and cost as attributes that segment the larger market into smaller tranches and offer exploitable opportunities for those that offer products that can meet specific demand.

So while Bionik is not the most well-capitalized of its peers and does not have the resources of a Parker Hannifin or Cyberdyne, this does not disqualify the company from participating in the market. ARKE lacks some functionality of other exoskeletons but we believe other potential competitive advantages such as a more affordable leasing/revenue share option, data functionality and ease of use are attributes that can be expected to be well-received in the rehab segment.

VALUATION / RECOMMENDATION

Near-term milestones include completing preclinical verification of ARKE, followed by commencement of clinical validation studies (1H 2016). If all goes well data could be available later in 2016 and regulatory filings for Canada and Europe happening in early 2017. Bionik hopes to have marketing approvals in both of these territories in the first half of 2017.

The quest for U.S. regulatory clearance will be more involved and require at least one formal U.S.-based clinical study in order to satisfy all of the special controls requirements. This is also predicated on first raising additional capital. We expect more information regarding what a U.S. regulatory program would entail will be gleaned from a potential future meeting with FDA. Hypothetically, assuming ReWalk Rehabilitation could be cited as a predicate device and a single, small (~n≤10) clinical study would acceptable to support the filing, we think a reasonable timeline from initiation to FDA clearance could be ~2.5 years. This includes approximate estimates of the study design taking about 6 months, 9-12 months to conduct the study, 6 months for data analysis, preparation of the filing (including aggregating all other special controls information) and FDA submission and another 6 months for turnaround of FDA clearance. This, however, will not move forward until at least BNKL has raised sufficient capital to support the cost of the program.

Commercialization: BNKL has provided only general information relative to their plans for commercialization, indicating that they expect to initially leverage the exposure from the clinical evaluations to detail to research centers and key opinion leaders in Canada. Initial strategy will be to generate awareness about ARKE. BNKL may be able to leverage some of IMT's contacts and sales channels (assuming the deal closes) which could be done with a small marketing team. Attendance at industry conferences and events is also likely to be part of the early marketing efforts. Target customers will be hospitals and rehab clinics.

The next phase of the commercialization strategy may entail establishing training centers and building a direct sales force in Canada and, assuming eventual FDA clearance, the U.S. as well. The game plan for Europe will be to sell through third-party distributors.

And as IMT's products offer synergies with that of ARKE, this may provide the benefits of detailing the combined product catalog at the same call points (i.e. rehab centers and hospitals), the ability to leverage existing customer and distributor relationships (both in and outside of the U.S.), additional competitive differentiation from other exoskeleton manufacturers and, most importantly, bolt on additional revenue drivers.

ARKE-Related Financial Model: We think the above regulatory and commercialization timelines may be do-able as the scope of validation and clinical trials should not be particularly burdensome, the company has indicated that they have at least two completed ARKE GEN-2 systems and initiation of clinical validation in Canada should be imminent.

Our model incorporates the following assumptions;

- **ARKE launches**: in Canada in late 2017 and in Europe in 1H 2018. As the feasibility, cost and timing of an FDA regulatory program and subsequent entry into the U.S. market is much more uncertain, we do not currently model any U.S. related revenue. This, as is the case with all of our assumptions, is subject to updating.
- **Revenue**: we model year 1 (2017), year 2 (2018) and year 3 (2019) revenue of $100k, $450k and $925k, respectively. For context, Ekso did over $500k in sales in its first year and $2.9M in its third year. ReWalk did $972k in its second year (the initial year with publicly available data) on the market. Some of the delta between our BNKL forecasted revenue and the much higher levels of RWLK and EKSO relates to an assumed lower placement rate as a result of what we think will be greater discernment in marketing spend and related focus on profitability with Bionik as compared to the other two companies.
- **Unit placements**: BNKL has indicated that they expect to pursue a leasing/revenue-share as opposed to or (possibly) in addition to an outright sales business model. While leasing may be feasible, until there is more clarity on how the company intends to implement this (which might require some type of asset-backed financing or sell-leaseback arrangement), we incorporate an assumption (which is subject to updating) that systems are sold outright. Using an average ~50k unit sales price (which is based on earlier communications by the company), we model an installed base of approximately 30 systems through the end of 2019. For context, RWLK and EKSO have installed bases of 211 (104 of which are in rehab centers) and ~170 units, respectively
- **Expenses**: while ReWalk and Ekso have a several-year lead on BNKL in commercialization of their products and could each have installed bases of several hundred units by the time Bionik makes their first sale, neither has demonstrated an ability to profitably scale their businesses. Growing the installed base appears to be the sole goal of ReWalk's and Ekso's business models with little regard to how much it costs to make those sales.

  Both Ekso and ReWalk have spent exorbitantly on sales and marketing to promote their products, for reimbursement-related promotional activities and in general awareness building of exoskeletons which has resulted in massive net losses since their respective product launches. With gross margins in the 7%

– 9% range, Ekso would need sales of at least $90M (exoskeleton-related sales were $4.2M in 2015) in their medical device division just to cover current SG&A expenses (assuming 50% of SG&A is attributable to medical vs. engineering segments) while ReWalk would need ~$340M (2015 revenue was just $3.7M) in sales. While gross margins may be scalable at higher production volumes, aggregate SG&A expense will also increase with higher sales volumes.

We expect BNKL to incur significantly lower SG&A expense as; initial sales efforts will focus on already established relationships in Canada, Europe is expected to be detailed via third-party distribution, IMT's customer and distribution relationships may be exploitable, the "burden" of general awareness building (and related cost) about exoskeletons should be lower and much of the initial legwork towards promotion of more substantial reimbursement should already have been done (although we expect the quest for greater reimbursement will be a many-years long and ongoing process).

In terms of gross margin, through developing components in-house and utilizing low-cost overseas manufacturing, Bionik believes they can achieve positive gross margins at initial commercialization and scale that with higher production volumes. Per our discussions with Bionik's management, their focus is on reaching profitability and not on reaching a hypothetical level of system placements. With a greater emphasis on expense control we think BNKL may be able to reach a point of break-even at a much lower level of sales than either ESKO or RWLK (this, of course, is hypothetical until proven).

IMT-Related Financial Model: IMT, the acquisition of which is expected to close in April, should provide BNKL with an immediate revenue stream. IMT generated approximately $2M in revenue in 2015 from its three currently commercialized products. As IMT is privately-held, there is no other financial or operational-specific information that is publicly available. It is also unclear as to the specifics of the development status of the pipeline product candidates or timelines on when these could potentially reach the commercial market. While we believe the addition of IMT may offer significant synergistic and scalable opportunities to ARKE and Bionic in general, we initially model annual incremental revenue to BNKL at the current $2M level. While this is certainly more conservative than management's expectations of 2016 being a "breakthrough year", our more tempered near-term outlook reflects the challenges inherent of forecasting with only very limited information. This is also subject to updating and based on relevant information flow. Our model also includes best-guesses in terms of incremental operating expenses related to IMT.

Cash balance at the end of the most recent reporting period (12/31/2015) was approximately $6.6M. Operating burn averaged about $1.1M per quarter in 2015. BNKL expects the cash balance to sustain operations, including the expected IMT acquisition, for at least the next 12 months. We anticipate that the company will need to raise additional operating capital prior to reaching a point of break-even cash flow which is reflected in our outstanding share counts in our model (while we have no particular insight into the form of future capital raises, common equity is used as a placeholder).

Are Ekso's and ReWalk's businesses scalable?

ReWalk generated negative gross margins in 2012, 2013 and 2014. Gross margin was a mere 5.7% in 2015. At this margin level RWLK's sales would need to increase 91x just to cover current SG&A spend. In addition, RWLK's sales have recently slightly contracted, with 2015 falling 5% from the prior year.

Ekso's situation is not much better. Note that we have estimated SG&A attributable to their medical device division to be 50% of the total, which is arguably a low estimate given that their other division, engineering, is services related. Despite this, due to Ekso's slim 7.7% gross margin, they would need to increase medical device sales 25x to cover current (estimated) SG&A expense.

	Ekso Bionics				ReWalk Robotics			
figures in 000s of $	Year Ending				Year Ending			
	2015	2014	2013	2012	2015	2014	2013	2012
Revenue	$4,252	$2,924	$1,612	$566	$3,746	$3,951	$1,588	$972
Gross Profit	$326	$876	$151	$13	$214	($621)	($429)	($11)
Gross Margin	7.7%	30.0%	9.4%	2.3%	5.7%	-15.7%	-27.0%	-1.1%
SG&A*	$8,130	$7,343	$4,102	$5,154	$19,451	$10,741	$5,853	$3,991
SG&A / Gross Profit	24.9	8.4	27.2	396.5	90.9	N/A	N/A	N/A

*SG&A related to EKSO medical devices assumed at 50% of total

Valuation:

We think comp valuation is the most appropriate methodology given the lack of foresight in regards to near-term sales. We feel RWLK and EKSO are the most appropriate comps given that they are mostly pure-play exoskeleton manufacturers for the medical market (we acknowledge EKSO has some aside segmentation), have devices of similar size and weight, are targeting geographies and customers/patient profiles similar to those of BNKL and are also of similar size as Bionik. We have excluded Parker Hannifin and Cyberdyne from our comp cohort as they are not pure play and are many multiples larger than BNKL. Rex, while pure-play and targeting similar markets, was excluded as their device has generated very little interest (as measured by revenue) which may be due to its certain uniqueness including high price and bulkiness.

Comparable ratio analysis is meaningless given the early stage of the companies and related minimal sales and large running operating losses. As such, metrics such as P/S, EV/S, EV/EBITDA and P/E are either highly skewed or return negative values. The market is therefore likely valuing RWLK and EKSO based on the potential of their technology and business models and how they fit with current and evolving market fundamentals, which we think is a fair proxy for enterprise value.

RWLK and EKSO trade at market values of approximately $123M and $106M, respectively. At least some of RWLK's premium relates to the December 14th announcement that VA will cover use of its device, which sent the stock price up almost three-fold over the ensuing two weeks (the stock has since given back some of those gains). While we view this as a potentially positive development for RWLK in terms of their systems placement rate, there remains no indication that this contract will meaningfully improve their negligible gross margins or even substantively reduce operating losses. We also think that there is very little or possibly negative value in the installed bases of RWLK and EKSO given that these systems were placed at barely better than cost and may actually be more of a cash drain going forward depending on the amount of in-period warranty claims. In fact EKSO's gross margins in their medical device segment narrowed from almost 30% in YE2014 to less than 8% in 2015 due to "increased service related expenses related to an accelerated maintenance program".

If Bionik can manufacture and sell ARKE at a lower price point than competitors' systems and assuming upcoming validation studies confirm a potential benefit in ease of use/programmability, we think these can provide substantive competitive advantages over ReWalk, Ekso GT and other systems. BNKL should also benefit from and be able to leverage off of the awareness building and the reimbursement promotion groundwork laid by its predecessors.

Given the massive ongoing losses and razor-thin margins of both RWLK and EKSO, we think a case could be made that BNKL should be valued at a premium to both. But despite what looks like it may be a better mousetrap (and a potentially better business model), ARKE has yet to be fully validated by a third party and does not yet have regulatory clearance. And the potential lower price point advantage will only be able to be confirmed following commercialization. We assign an approximate 20% discount as a result of these trade-offs and believe an appropriate value of BNKL is 80% of the average of RWLK and ESKO, or ~$90M market capitalization. In addition, we assign a current value of $30M for IMT, representing the value of the commercialized and pipeline portfolios, R&D assets including facilities, intellectual property and library of clinical data. This does not include realization of potential synergistic benefits of the combined companies – value of which could eventually be significant but which we feel is too early to be able to accurately estimate.

We think there is upside to our valuation with successful completion of the following milestones;

- outcomes of third-party validation. Validation at rehabilitation centers in Canada is expected to be completed in 2H 2016
- regulatory clearance. Assuming positive clinical validation results come in 2H 2016, BNKL believes they can file for CE Mark and Health Canada approval shortly afterwards and may have marketing clearance in both territories in 1H 2017
- price point. ARKE pricing will depend on cost to manufacture as well as be determined by what the market is willing to pay. Whether this is realizable is something that will not be known until after the system has been commercialized

Other potential catalysts that could benefit the share price include additional competitive upgrades to ARKE, successful integration of IMT and significant growth of their product portfolio (and pipeline), additional synergistic and non-dilutive product acquisitions/licenses, confirmation of our supposition of BNKL's more efficient business model and improvement to market fundamentals (such as reimbursement, greater adoption, etc).

A $90M market capitalization, which equates to ~$1.25/share, is a 50% premium to the current $0.83 share price. We are initiating coverage of BNKL with a Buy recommendation and look for positive outcomes on certain events including those listed above as triggers that could potentially move our target price higher.

Bionik Laboratories Corp

	2014 A	2015 A	2016 E	2017 E	2018 E	2019 E
Total Revenues	$0.0	$0.0	$1,100.0	$2,100.0	$2,450.0	$2,925.0
YOY Growth	-	-	-	-	*16.7%*	*19.4%*
Cost of Revenues	$0.0	$0.0	$1,023.0	$1,955.0	$2,229.0	$2,553.8
Gross Income	$0.0	$0.0	$77.0	$145.0	$221.0	$371.3
Total Gross Margin			*7.0%*	*6.9%*	*9.0%*	*12.7%*
R&D	$1,176.7	$1,489.5	$3,420.0	$3,880.0	$3,625.0	$3,410.0
% R&D	-	-	*310.9%*	*184.8%*	*148.0%*	*116.6%*
SG&A	$1,257.0	$4,435.5	$6,470.0	$7,350.0	$8,125.0	$8,340.0
% SG&A	-	-	*588.2%*	*350.0%*	*331.6%*	*285.1%*
Operating Income	($2,433.6)	($5,925.0)	($9,813.0)	($11,085.0)	($11,529.0)	($11,378.8)
Operating Margin	-	-	-	-	-	-
Interest income, net	($67.3)	($3.1)	$5.0	$5.0	$5.0	$5.0
Other income	$617.6	$33.9	$41.0	$18.0	$62.0	$12.0
Pre-Tax Income	($1,883.3)	($5,594.1)	($9,767.0)	($11,062.0)	($11,462.0)	($11,361.8)
Taxes	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Tax Rate	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*
Net Income	($1,883.3)	($5,594.1)	($9,767.0)	($11,062.0)	($11,462.0)	($11,361.8)
YOY Growth	-	-	-	-	-	*-0.9%*
Net Margin	-	-	-	-	-	-
EPS	($0.04)	($0.08)	($0.09)	($0.10)	($0.09)	($0.09)
YOY Growth	*#DIV/0!*	*93.9%*	*14.2%*	*3.5%*	*-4.0%*	*-7.7%*
Diluted Shares O/S	44,127	67,594	103,300	113,000	122,000	131,000

Brian Marckx, CFA

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LEADERSHIP

Management

Peter Bloch, CPA, CA
Chief Executive Officer, Chairman of the Board
Mr. Bloch has served as the Company's Chief Executive Officer since March 2013, and was previously the company's Chief Financial Officer. Mr. Bloch is a Chartered Accountant with a track record of building both public and private technology companies, mainly in the Life Sciences industry. His past 25 years of executive management experience includes CFO and Joint Interim CEO of Sanofi Canada Inc., CFO of Intellivax and Founder of Tribute Pharmaceuticals. Mr. Bloch also served as CFO of Gennum and Just Energy, both TSX listed Companies. These companies have ranged in size from start-ups to revenues of over $2 billion. In these roles Mr. Bloch has secured significant funding for both private and public companies, including experience with Initial Public Offerings. Mr. Bloch has been on a number of both public and private company's board of directors.

Michal Prywata
Co-founder and Chief Operating Officer
Mr. Prywata is the co-founder of Bionik Laboratories and has served as the company's Chief Operating Officer since March 2013, and was previously the company's Chief Executive Officer. He studied biomedical engineering at Ryerson University and has a proven track record of inventing and winning technology showcases. While attending Ryerson, Mr. Prywata co-invented the world's first robotic, prosthetic arm that is controlled by brain signals. Equally impressive is his strong understanding of developing technologies that address significant and untapped markets. He is responsible for raising the initial capital to found Bionik and turn numerous concepts into products.

Thiago Caires
Co-founder and Chief Technical Officer
Mr. Caires is the co-founder of Bionik Laboratories and has served as the company's Chief Technical Officer since May 2010, and was previously the company's president. He started his engineering training in Mechatronics at PUC University, Rio de Janeiro, Brazil and then biomedical engineering at Ryerson University. He has a proven track record of inventing and winning technology showcases. While attending Ryerson, he co-invented the world's first robotic, prosthetic arm that is controlled by brain signals. Mr. Caires is responsible for raising the initial capital to found Bionik and turn numerous concepts into products.

Leslie N. Markow, CPA, CA, C.Dir
Chief Financial Officer
Ms. Markow has served as the Company's Chief Financial Officer since September 2014. She has over 25 years of finance and accounting leadership experience and holds a CPA and CA in Canada, US CPA (Illinois) and Chartered Director designations. Ms. Markow is the former Chief Financial Officer of Stewardship Ontario and Blue Ocean NutraSciences Inc., and Director of Client Service for Resources Global Professionals, a Nasdaq-listed global consulting firm. For 11 years she held various positions, including Chief Administrative Officer at SunOpta Inc. a Nasdaq/TSX listed public company. Ms. Markow started her career in 1983 with PricewaterhouseCoopers, ultimately holding a position as Senior Audit Manager. She is a member of the Board of Directors and Chairperson of the Audit Committee of Jemtec Inc. Mr. Markow also is a member of Financial Executives Canada, where she is a past National Board Director, Toronto Board Director, Toronto Chapter President and the winner of the Toronto Leadership Award. She is a faculty member of The Directors College, which is a joint venture of McMaster University and The Conference Board of Canada.

Board

Peter Bloch, CPA, CA
Chairman

Robert Hariri, MD, PhD
Director
Bob Hariri is a surgeon, biomedical scientist and highly successful serial entrepreneur in two technology sectors: biomedicine and aerospace. Dr. Hariri is the Chairman, Founder, Chief Scientific Officer, and former Chief Executive Officer of Celgene Cellular Therapeutics, one of the world's largest human cellular therapeutics companies. Dr. Hariri has pioneered the use of stem cells to treat a range of life threatening diseases and has made transformative contributions in the field of tissue engineering. His activities and experience includes academic neurosurgeon at Cornell, businessman, military surgeon and aviator and aerospace innovator. Dr. Hariri has over 90 issued and pending patents, has authored over 100 published chapters, articles and abstracts and is most recognized for his discovery of pluripotent stem cells from the placenta and as a member of the team which discovered the physiological activities of TNF (tumor necrosis factor). Dr. Hariri was recipient of the Thomas Alva Edison Award in 2007 and 2011, The Fred J. Epstein Lifetime Achievement Award and has received numerous other honors for his many contributions to biomedicine and aviation. Dr. Hariri also serves on numerous Boards of Directors including MYOS Corporation and Provista Diagnostics. Dr. Hariri is an Adjunct Associate Professor of Pathology at the Mount Sinai School of Medicine and a member of the Board of Visitors of the

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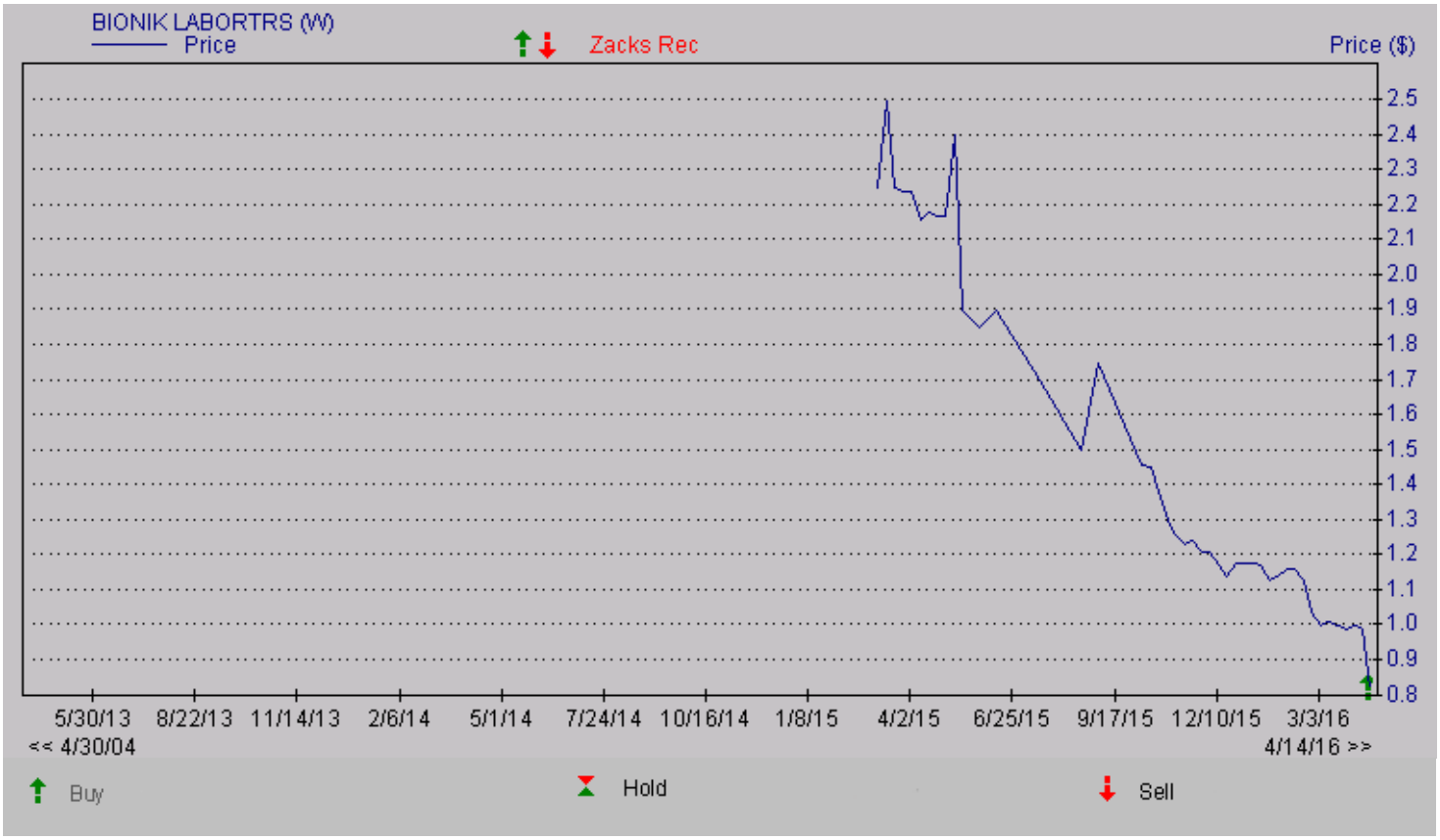
Columbia University School of Engineering & Applied Sciences and the Science & Technology Council of the College of Physicians and Surgeons, and is a member of the scientific advisory board for the Archon X PRIZE for Genomics, which is awarded by the X PRIZE Foundation. Dr. Hariri is also a Trustee of the Liberty Science Center and has been appointed Commissioner of Cancer Research by New Jersey Governor Christie. Dr. Hariri is a member of the Board of Trustees of the J. Craig Venter Institute. Dr. Hariri is a jet-rated commercial pilot with thousands of hours of flight time in over 60 different military and civilian aircraft, Dr. Hariri has also produced several feature films as well as documentaries on global societal issues.

Marc Mathieu
Director
Mr. Mathieu has been the U.S. Chief Marketing Officer of Samsung North America since June 2015. Prior to that, from April 2011 to June 2015, he was Senior Vice President of Global Marketing at Unilever, where he was responsible for the development of Unilever's global marketing strategy. Mr. Mathieu has also overseen the implementation of pivotal programs such as Project Sunlight, the first Unilever brand consumer initiative to motivate millions of people to adopt more sustainable lifestyles, and The Unilever Foundry, a platform that provides a single entry-point for innovative start-ups seeking to partner with Unilever. Since January 2011, Mr. Mathieu has been the Chairman and Co-founder of We&Co, a social app for People who provide and enjoy great service. From January 2009 through August 2011, Mr. Mathieu founded and was principal of the strategic brand consultancy, BeDo, which worked to build brands with purpose and fuse marketing and sustainability agendas. From 1996 through 2008, Mr. Mathieu held various positions at Coca-Cola, culminating in Senior Vice President Global Brand Marketing. He sits on the Advisory Panel of the Guardian Digital and Media network and writes for Marketing Week magazine. He is a regular conference and keynote speaker on themes such as the Future of Marketing. Mr. Mathieu has a passion for theatre and sits on the Board of Directors for the Almeida Theatre and Punchdrunk.

Michal Prywata

Thiago Caires

HISTORICAL ZACKS RECOMMENDATIONS



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Hold/Neutral: The analyst expects that the company will perform in line with the broader U.S. equity market over the next one to two quarters.
Sell/Underperform: The analyst expects the company will underperform the broader U.S. Equity market over the next one to two quarters.

The current distribution is as follows: Buy/Outperform- 27.5%, Hold/Neutral- 50.9%, Sell/Underperform – 14.7%. Data is as of midnight on the business day immediately prior to this publication.