May 22, 2019

# Zacks Small-Cap Research

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## MYOS RENS Technology (MYOS-NASDAQ)

### Q1 2019: MYOS Canine Sales Jump, Initial Reviews are Highly Encouraging. New QoL Dog Study Planned

Based on our 10-year DCF model that uses a 15% discount rate and a 2% terminal growth rate, the target price comes out to roughly $3.50/share. Our assumptions and financial model will be updated based on relevant news.

| | |
|---|---|
| Current Price (05/22/19) | $1.26 |
| **Valuation** | **$3.50** |

### OUTLOOK

Initial reviews of MYOS Canine appear very encouraging - including dog owners that describe having been out of options and tried MYOS Canine as a last effort prior to putting their dogs to sleep – with almost miraculous-sounding results.
Catalysts that we think drive demand include increasing awareness of the benefits of MYOS Canine at both the veterinarian and consumer levels. Dissemination of the proven clinical benefits of MYOS Canine in promoting muscle growth and post-surgery recovery, we think, is almost certain to resonate at the professional healthcare level. Management indicated on the Q1 call that this is already happening.

And we also see several catalysts that we think drive demand and sales of Yolked. This includes ever-expanding distribution and awareness-building efforts. As it relates to distribution, along with the Vitamin Shoppe, where Yolked is now available in all of their 775 stores, the product will be rolled out nationally by National Sales Associates (which will sell both Yolked and MYOS Canine), which has eight regional offices and 160 sales associates.

### SUMMARY DATA

| | |
|---|---|
| **52-Week High** | **$2.50** |
| **52-Week Low** | **$1.04** |
| **One-Year Return (%)** | **-16.13** |
| **Beta** | **-0.16** |
| **Average Daily Volume (sh)** | **42,789** |
| **Shares Outstanding (mil)** | **9** |
| **Market Capitalization ($mil)** | **$12** |
| **Short Interest Ratio (days)** | **N/A** |
| **Institutional Ownership (%)** | **5** |
| **Insider Ownership (%)** | **44** |
| **Annual Cash Dividend** | **$0.00** |
| **Dividend Yield (%)** | **0.00** |
| **5-Yr. Historical Growth Rates** | |
| **Sales (%)** | **-30.0** |
| **Earnings Per Share (%)** | **N/A** |
| **Dividend (%)** | **N/A** |
| **P/E using TTM EPS** | **N/A** |
| **P/E using 2019 Estimate** | **N/A** |
| **P/E using 2020 Estimate** | **N/A** |
| **Zacks Rank** | **N/A** |

| | |
|---|---|
| **Risk Level** | **High,** |
| **Type of Stock** | **Small-Blend** |
| **Industry** | **Consumer-Med** |

### ZACKS ESTIMATES

**Revenue**
(in millions of $)

| | Q1 (Mar) | Q2 (Jun) | Q3 (Sep) | Q4 (Dec) | Year (Dec) |
|---|---|---|---|---|---|
| 2018 | $0.06 A | $0.09 A | $0.07 A | $0.15 A | $0.36 A |
| 2019 | $0.15 A | $0.14 E | $0.23 E | $0.32 E | $0.83 E |
| 2020 | | | | | $2.37 E |
| 2021 | | | | | $4.53 E |

**Earnings per Share**

| | Q1 (Mar) | Q2 (Jun) | Q3 (Sep) | Q4 (Dec) | Year (Dec) |
|---|---|---|---|---|---|
| 2018 | -$0.17 A | -$0.14 A | -$0.12 A | -$0.01 A | -$0.45 A |
| 2019 | -$0.13 A | -$0.12 E | -$0.13 E | -$0.13 E | -$0.50 E |
| 2020 | | | | | -$0.51 E |
| 2021 | | | | | -$0.39 E |

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

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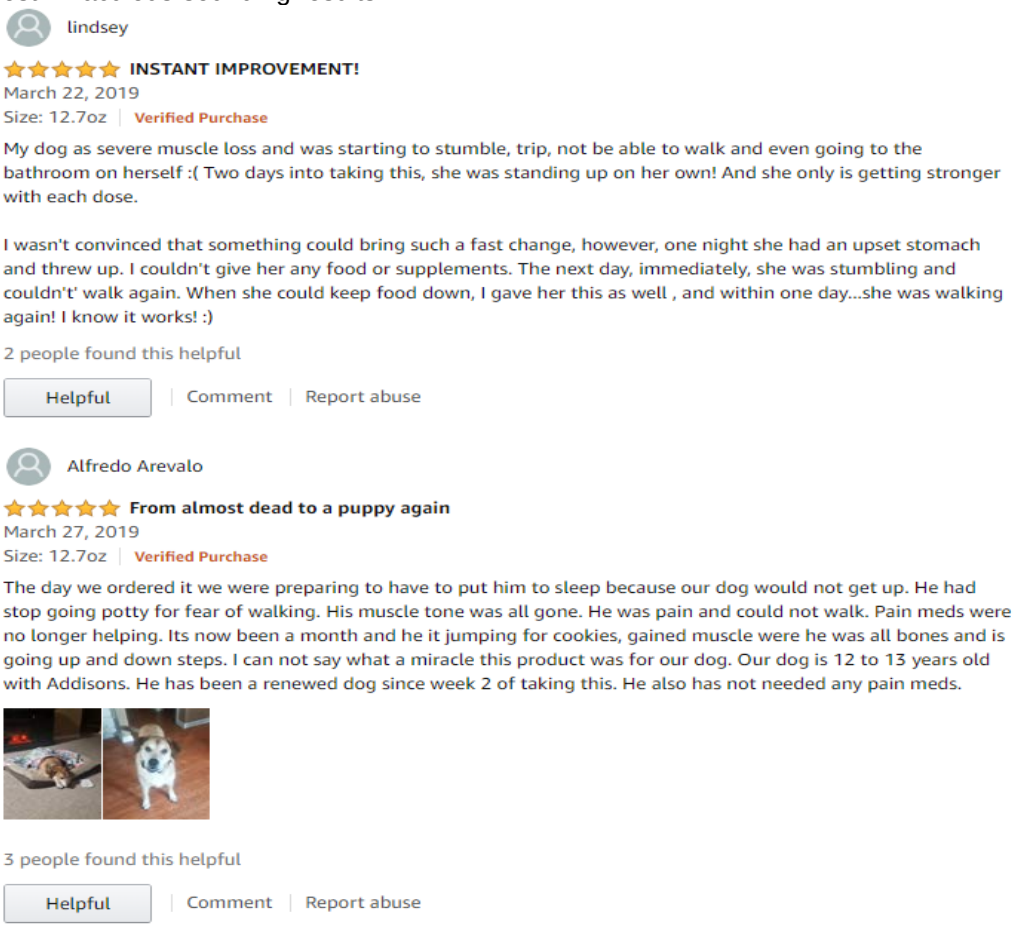
**Q1 2019 Update:** *MYOS Canine Sales Jump, Initial Reviews are Highly Encouraging. New QoL Dog Study Planned…*

MYOS reported Q1'19 financial results and provided a business update. Relative to the financials, while total revenue remains less than substantial, the company is seeing fairly significant growth of its two main products; Yolked and MYOS Canine Formula. As a reminder, these products launched in April and June 2018, respectively. Revenue from MYOS Canine nearly doubled from Q4'18. While Yolked sales fell 24% over the same period, the decline was not unexpected given (what we had assumed were) significant Vitamin Shoppe stocking orders in December.

Importantly, we see a number of near-term catalysts that we think further drives demand for both products. These include increasing awareness of the benefits of MYOS Canine at both the veterinarian and consumer levels. Dissemination of the proven clinical benefits of MYOS Canine in promoting muscle growth and post-surgery recovery, we think, is almost certain to resonate at the professional healthcare level. Management indicated on the Q1 call that this is already happening.

Publication of the Kansas State University study, which showed MYOS Canine Formula significantly reduced muscle loss in dogs following TPLO (i.e. surgery after ligament tear), could be a substantive event in terms of educating veterinarians about the product's evidence-based clinical benefits (management noted on the call that submission of a manuscript to a journal is a near-term goal). A Kansas State-based quality-of-life canine study is expected to begin later this year – and assuming positive results, could be a major factor in helping drive awareness beyond veterinarians and to the consumer level.

And as it relates to consumer feedback about MYOS Canine, initial online reviews of the product appear very encouraging. We acknowledge that it is difficult to determine with much certainty if any particular online review is legitimate and, as such, would typically not reference online reviews. But in this case, we have no reason to believe that all of the reviews that we have seen are anything but genuine. Below is a screenshot of a couple of the reviews from Amazon and we encourage investors to read all of them (https://amzn.to/30zfYFQ). We note that what appears to be even the 'worst' review does not claim that the product does not 'work'. While the 'best' include dog owners that describe having been out of options and tried MYOS Canine as a last effort prior to putting their dogs to sleep – with almost miraculous-sounding results.



lindsey

★★★★★ **INSTANT IMPROVEMENT!**

March 22, 2019

Size: 12.7oz | Verified Purchase

My dog as severe muscle loss and was starting to stumble, trip, not be able to walk and even going to the bathroom on herself :( Two days into taking this, she was standing up on her own! And she only is getting stronger with each dose.

I wasn't convinced that something could bring such a fast change, however, one night she had an upset stomach and threw up. I couldn't give her any food or supplements. The next day, immediately, she was stumbling and couldn't' walk again. When she could keep food down, I gave her this as well , and within one day...she was walking again! I know it works! :)

2 people found this helpful

Helpful | Comment | Report abuse

Alfredo Arevalo

★★★★★ **From almost dead to a puppy again**

March 27, 2019

Size: 12.7oz | Verified Purchase

The day we ordered it we were preparing to have to put him to sleep because our dog would not get up. He had stop going potty for fear of walking. His muscle tone was all gone. He was pain and could not walk. Pain meds were no longer helping. Its now been a month and he it jumping for cookies, gained muscle were he was all bones and is going up and down steps. I can not say what a miracle this product was for our dog. Our dog is 12 to 13 years old with Addisons. He has been a renewed dog since week 2 of taking this. He also has not needed any pain meds.

3 people found this helpful

Helpful | Comment | Report abuse

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These dog owners are describing a substantial reversal in their pet's quality-of-life (QoL) after giving them MYOS Canine. Significant deterioration in a dog's QoL is something that many (or most) owner's experience, particularly as their pets reach older age. These reviews, increased awareness at the healthcare and consumer levels, positive results (assuming that happens) of the upcoming Kansas St QoL study and the fact that there are no other products on the market that can make scientifically-based claims of stemming muscle loss, are some of the reasons why we think MYOS Canine could experience accelerating demand.

And we also see several catalysts that we think drive demand and sales of Yolked. This includes ever-expanding distribution and awareness-building efforts. As it relates to distribution, along with the Vitamin Shoppe, where Yolked is now available in all of their 775 stores, the product will be rolled out nationally by National Sales Associates (which will sell both Yolked and MYOS Canine), which per MYOS's April 4th PR announcing the relationship, has eight regional offices and 160 sales associates. NSA is a sales and marketing brokerage firm that works with a "wide array of retail customers throughout the U.S. primarily in the Natural, Supermarket, Specialty Gourmet, & Mass Retail Sales Channels." Among these are Whole Foods. Management has indicated that they plan on continuing to look to expand their distribution capabilities and reach for Yolked.

And as it relates to further building awareness for the product, the recently-penned endorsement partnership with Aaron Gordon of the Orlando Magic (Feb 2019), securing courtside advertising during nationally televised college basketball games, the partnership with IMG and a presence in college athletic departments (including Virginia Tech, West Virginia, Marshall, Princeton, Rutgers, University of Pittsburgh, St. John's and University of Delaware) are all catalysts that should continue to make a growing impact over time. This is in addition to just general growing awareness of the product based on positive consumer experiences.

**Q1 2019 revenue** was $149k, up 161% yoy (from $57k in Q1'18), flat from Q4'18 and about 48% ahead of our $101k estimate. The majority of the beat to our number relates to substantially greater than anticipated sales of MYOS Canine.

Sales of Yolked and MYOS Canine Formula were $68k (vs our $50k estimate) and $61k (vs our $32k estimate), accounting for 46% and 41%, respectively, of total revenue. Yolked sales fell about 24% sequentially from Q4'18 ($89k) – a drop which we think may be related to stocking orders from The Vitamin Shoppe. Meanwhile, MYOS Canine saw sales jump 69% qoq.

Qurr, MYOS' consumer-focused Fortetropin-based products (puddings, powders and shakes) which launched in April 2017, accounted for the majority of the rest of total revenue in Q1. Qurr sales were $16k, which is down 16% from Q4'18 ($19k) and the lowest quarterly revenue for that product since at least Q4'16 (i.e. the furthest back that we looked). The tailing-off of Qurr sales was expected (we forecasted $14k in sales for Q1'19) as MYOS had recently indicated that they would deemphasize the product as they shifted their focus and resources towards Yolked and MYOS Canine.

Physician Muscle Health Formula, a Fortetropin-based product sold to physicians for their patients which launched in May 2016, accounted for the remainder of total revenue. This product generated sales of just $5k in Q1'19, inline with our $4k estimate. Physician Muscle Health had yet to gain much traction, contributing just $24k (5% of total) of revenue in 2017 and another $24k (7% of total) in 2018. We continue to expect insignificant revenue from this product going forward and anticipate that it will be discontinued. We do, however, think that the physician channel could eventually be reinvigorated with additional human clinical study results – potentially including a planned trial in patients undergoing total knee replacement surgery (discussed below). Additionally, results of the ongoing University of Berkeley study, which aims to understand the impact of Fortetropin on the rate at which new muscle is synthesized in men and women between 60 and 75 years of age, could further help to generate interest for medical / geriatric applications of the product. This study is expected to complete in the coming weeks.

**Product Updates:**

**Yolked** appears to continue to be well-received with management indicating that the product is receiving positive feedback from both IMG and the universities themselves. Since its launch in April 2018 it has been detailed to collegiate athletic programs through their strategic partnership with IMG College. As a reminder, initially the IMG agreement covers nine Division I colleges (in the NE). Many of the initial schools that they have worked with began a four-month program in July 2018 – while others started in the Fall. In furthering their collegiate sports related awareness-building efforts, MYOS recently announced that Yolked has had a presence at nationally-televised college basketball games with courtside LED signage. Going into the Fall of 2019, Yolked related advertisements will be visible during college football games.

MYOS has also made a move with Yolked into professional sports. In early February the company announced an endorsement deal with Aaron Gordon, a power forward and prolific scorer of the NBA's Orlando Magic. Gordon will act as a celebrity athlete endorser for Yolked and, per the press release announcing the relationship, "will represent Yolked through a variety of media channels, including social media and traditional formats, and serve as a face of the brand." Management noted on the Q1'19 call that having Aaron Gordon's endorsement of Yolked has also further helped provide credibility for the product. Noteworthy is that MYOS indicated that this "is the first major endorsement…but will not be the last" – suggesting that additional similar endorsement deals for Yolked could follow.

MYOS is also now tapping the consumer market with Yolked. In late-2018 the company launched Yolked to the consumer market with distribution established through The Vitamin Shoppe. Yolked was in all of their 775 stores by the close of 2018 and can also be purchased on their website. Yolked can also now be purchased on Amazon.com. And in April 2019 MYOS announced that National Sales Associates, a sales and marketing brokerage firm with eight regional offices and 160 associates, will sell the product (as well as MYOS Canine) to their U.S. retail client base – which includes natural foods, specialty gourmet, supermarkets and other establishments. Among these are Whole Foods. And, in furthering their consumer-facing initiatives, MYOS recently updated the yolked.com website and began implementing formal sales and marketing programs aimed at building awareness and increasing sales.

**MYOS Canine Muscle Formula**, their first Fortetropin-based supplement for dogs launched in June 2018. MYOS has wasted no time in generating early awareness of the product and in expanding their sales reach. MYOS Canine was featured at the Atlantic Coast Veterinary Conference in Atlantic City, NJ in October 2018. In terms of distribution-reach, upon launch the product had its own website and became available on Amazon.com (reviews from which are already very encouraging). Then, in November Miller Veterinary Supply East, which (per their website) provides "licensed veterinarians the equipment, instruments, pet food, pharmaceuticals and supplies needed to run their practices", began carrying MYOS Canine. Miller East affords access to more than 6,000 veterinary hospitals in the eastern U.S.

MYOS Canine is believed to be the first and only evidence-based supplement for supporting muscle health in dogs. MYOS has noted that initial observational studies (including two done at veterinarian hospitals) indicated that their Fortetropin-based supplement may improve mobility. While anecdotal, coupled with positive results of prior studies and highly compelling results of the KSU study (detailed below), the database of evidence continues to grow and fortify.

There is no denying the attractiveness of the domestic pet market. The U.S. pet supplements market is worth approximately $600M and growing rapidly. MYOS has indicated that they expect to further leverage the massive growth of the pet-health market. While MYOS Canine Muscle Formula is their first commercial foray into the market, it is not expected to be their last as their intention is to bring additional Fortetropin-based pet products to market. Current customer call-points include veterinarian hospitals, vet practices and direct-to-consumer.

In addition to the aforementioned catalysts which we think drive demand for the product, revenue could gain additional traction from the new distribution via Miller East, which came online in Q4'18, as well as from increased awareness as a result of exhibiting and presenting at major veterinarian conferences including the Atlantic Coast Vet conference (October 2018) and the North American Veterinary Community (NAVC) / VMX Conference (January 2019).

Expanding from dogs to other animals, potentially including cats and horses, could represent a mid-to-longer term catalyst for MYOS Canine (animal) Formula. We expect we may hear more in the near future about MYOS's potential plans to broaden appeal of their product to other pets and domesticated animals.

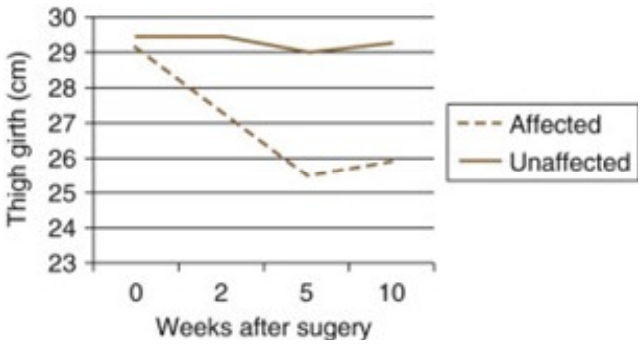
**Positive Results of Canine Muscle Recovery Study Following Surgery…**

In mid-January MYOS announced positive results of a study conducted at Kansas St. University evaluating the ability of their canine Fortetropin formula to reduce muscle loss in dogs following tibial-plateau leveling osteotomy, or TPLO (i.e. surgery after ligament tear), a common procedure for dogs with cranial cruciate ligament rupture (CCLR). According to the Journal of the American Veterinary Medical Association, over one million surgeries involving the knee are performed on dogs each year. CCLR is the most common cause of lameness in dogs and one that pet owners are estimated to spend over $1.5B per year to treat (the majority of which relates to surgery).[1,2]

[1] Coletti et al. Complications associated with tibial plateau leveling osteotomy: A retrospective of 1519 procedures. Can Vet J. 2014 Mar; 55(3): 249–254

As the leg must be immobilized for weeks following TPLO, muscle loss is a common complication of the procedure. Muscle atrophy is typically evident within two weeks following surgery. And while studies have shown that muscle mass generally begins to return by the fourth week into recovery, significant atrophy remains by week eight. Other studies have shown that affected limbs (i.e. those surgically repaired) maintained just 60% of their muscle mass (as compared to the unaffected limbs) 10 weeks into recovery (chart below) and many dogs show residual muscle atrophy even one year following surgery.[3]

**Muscle Loss in Dogs After TPLO**[3]




As results of this Kansas St study show, MYOS's Canine Formula appears to significantly reduce this muscle loss common among dogs that undergo TPLO. The double-blinded study included 100 dogs, 50 of which received daily Fortetropin, with the other 50 receiving a macronutrient-matched placebo (i.e. daily cheese powder). The dogs were evaluated on change in muscle mass of the affected and unaffected limbs, as measured by thigh circumference, and change in weight-bearing capacity – both of which are well-established endpoints in TPLO studies. Serum myostatin levels were also evaluated.

The dogs underwent forced exercise restriction during the first eight weeks following surgery. This was followed by a gradual return to activity during weeks 9 through 12. Measurements were taken at baseline, week 8 and week 12. Significance was set at $p<0.1$.

Topline results were announced in a press release on January 15th and, later that same month, the full results were presented by Ken Harkin, Professor & Section Head, Kansas State University College of Veterinary Medicine, at the North American Veterinary Community (NAVC) / VMX Conference in Orlando.

Results showed that;

- Fortetropin prevented loss of muscle mass of the affected limb as measured by the thigh circumference in their affected and unaffected limbs. While there was no statistically different change in thigh circumference (of both the affected and unaffected limbs) of dogs that received Fortetropin, there was a statistically significant decrease in thigh circumference (of both the affected and unaffected limbs) among dogs that received placebo
- Fortetropin-supplemented dogs had a statistically significant greater improvement in the percentage of weight supported by the affected limb as determined by force plate stance analysis (i.e. a more rapid return to normal stance force distribution) as compared to the placebo group from week 0 to week 8 (i.e. during period of exercise restriction)
- Fortetropin prevented a rise in levels of serum myostatin, which is a protein that prevents muscle growth. While there was no statistically significant change in serum myostatin levels among dogs that received Fortetropin, there was a statistically significant increase (from week 0 to week 8 and from week 0 to week 12) in serum myostatin levels among dogs in the placebo group

MYOS also noted that there was significant interest in the results from attendees of VMX, which is one of the largest veterinary conferences in the world and attracted over 700 exhibitors last weekend. We think that these results significantly bolster the effectiveness claims of MYOS Canine Formula, which is believed to be the first and only evidence-based supplement for supporting muscle health in dogs. As such, we expect that this most recent study

[2] Wilke et al. Estimate of the annual economic impact of treatment of cranial cruciate ligament injury in dogs in the United States. J Am Vet Med Assoc. 2005 Nov 15;227(10):1604-7.
[3] Darryl L. Millis. Responses of Musculoskeletal Tissues to Disuse and Remobilization. Canine Rehabilitation and Physical Therapy (Second Edition), 2014

data will likely account for a significant portion of MYOS' marketing message. MYOS expects to submit the study for publication in the near-term – eventually publishing of which we think should further drive awareness at the veterinarian / KOL level.

***Readying for human study in total knee replacement surgery…***

As we noted in our update following announcement of the Kansas St study results, given that TPLO recovery in dogs has significant crossover to muscle atrophy experienced by humans following certain orthopedic surgeries, such as ACL repair, we opined that these results could also play a role in helping to guide a similar clinical development program in humans. For example, studies have shown that some muscle fibers of the affected limb may never fully recover following ACL surgery in humans, resulting in chronic loss of quadriceps strength.[4] At the time we noted that we expected to hear more about MYOS' plans for leveraging these Kansas State results for potentially guiding additional human clinical programs.

It was not a long wait as management noted on the Q4 call in late-March 2019 that these Kansas State TPLO results have facilitated their interest in conducting a (somewhat) similar study in humans – specifically, in patients undergoing total knee replacement surgery. The goal will be to demonstrate that Fortetropin supplementation can reduce total recovery time and facilitate rehabilitation. While still in the early stages, management noted that they hope to announce initial details of the planned study in the coming weeks.

**Product Development**

In addition to the recently completed Kansas State study and the anticipated human knee replacement study, MYOS's recent product development efforts have included collaborations with the University of Berkeley, Weill Cornell Medical College and Rutgers University. In addition to these (detailed below), MYOS is looking to add additional preclinical and clinical studies in their ongoing quest to continue to build their Fortetropin evidence database.

- The study at the University of Berkeley aims to understand the impact of Fortetropin on the rate at which new muscle is synthesized in men and women between 60 and 75 years of age. Positive results from the study could help bolster sales of MYOS' product in the future. MYOS anticipates the study completing in Q2 of this year.
- In May 2018 MYOS contracted with Weill Cornell Medical College for a preclinical study to evaluate Fortetropin in preventing weight and muscle loss associated with lung cancer. Unfortunately, per an update in the 2018 10-K, results did not show that Fortetropin had a significant impact on cancer-related weight and muscle loss and as such, MYOS has decided to not pursue future cachexia-related studies. As outcomes of this study had no consequences on our model, it does not affect our outlook or price target.
- In March 2018 MYOS entered into a research agreement with Rutgers University to develop product candidates for preventing muscle loss (resulting from sarcopenia and cachexia) and improving muscle health. The program is led by Joseph W. Freeman, Ph.D., an Associate Professor in the Department of Biomedical Engineering at Rutgers. Dr. Freeman is also part of the University's Musculoskeletal Tissue Regeneration (MoTR) laboratory which focuses on developing engineering techniques to repair and regenerate musculoskeletal tissue.

**Cash**

MYOS continues successfully raise operating funds. In Q1'19 this included the sale of 1.55M shares at an average of $1.49/share for gross proceeds of $2.3M. Joe Mannello (MYOS' CEO) also recently agreed to lend up to $1M in exchange for a 5%, one-year (matures 8/31/19) unsecured promissory note ($1M funded as of year-end 2018). Subsequently, $250k of this was converted to common stock).

[4] Arangio et al., Thigh muscle size and strength after anterior cruciate ligament reconstruction and rehabilitation. J Orthop Sports Phys Ther. 1997 Nov;26(5):238-43.

**Valuation:**

**Maintaining $3.50/Share Price Target…**
We have made only small adjustments to our model following Q1'19 results. We continue to look for gradual revenue growth over the near term but for that to accelerate as awareness builds of the clinical and real-life benefits of Fortetropin on muscle health (in both humans and pets).

The Kansas State TPLO results have the potential to facilitate MYOS's overall marketing message as it relates to the proven benefits of Fortetropin as well as bolster the revenue curve of MYOS Canine Muscle Formula. Indications are that the product is already resonating with certain veterinarians and key opinion leaders in the animal health community and we expect additional positive clinical study data to further stoke interest from this segment. Initial consumer reviews of the product are very encouraging – this we think could generate word-of-mouth demand-pull. And while we would not typically place great reliance on online reviews (given their susceptibility bias), we also acknowledge that these can have substantive influence on purchasing decisions – and genuine positive feedback can represent a significant determinant of long-term success of a product.

Meanwhile, positive outcomes of a total knee replacement study (currently in the planning phase) could be a significant catalyst to helping to drive adoption among medical nutrition channels. The University of Berkeley study, expected to read-out later this year, could also provide substantive support for use in medical and geriatric applications. As such we will be eager to hear updates on the progress of these studies.

Beefed-up distribution and new marketing initiatives should benefit sales of Yolked. Celebrity athlete endorsements, The Vitamin Shoppe and National Sales Associates distribution channels, and additional presence in collegiate and professional sports should help to define Yolked's brand. This, along with clinical evidence should aid in separating Yolked from plethora of protein powders and other supplements that largely lack the efficacy-related evidence that Fortetropin does. While these awareness and brand-building initiatives can take time to resonate with consumers, we think these efforts have the potential to carve out Yolked in a niche by itself and to drive revenue for the long term.

We continue to be highly encouraged by management's evidence-based approach towards messaging and product development and, assuming positive results from ongoing (and future) studies, would expect this strategy to result in long-term growth in both revenue and shareholder value. In the meantime, we think consumer word-of-mouth, particularly as it relates to the effectiveness of MYOS Canine Formula in addressing muscle weakness and atrophy in dogs, could represent a potent near-term demand driver of the product.

We use a 10-year DCF model to value MYOS. We incorporate a discount rate of 15% and 2% terminal growth rate, which values MYOS at approximately $3.50/share, a significant premium to the current trading level.

## PROJECTED INCOME STATEMENT

**MYOS RENS TECHNOLOGY**

| MYOS RENS TECHNOLOGY | 2017A | 2018A | Q1E | Q2E | Q3E | Q4E | 2019E | 2020E | 2021E |
|---|---|---|---|---|---|---|---|---|---|
| Total Revenue | $0.53 | $0.36 | $0.15 | $0.14 | $0.23 | $0.32 | $0.83 | $2.37 | $4.53 |
| Y-o-Y Growth | 61% | -32% | 161% | 55% | 241% | 115% | 131% | 185% | 91% |
| Total cost of revenue | $0.31 | $0.25 | $0.06 | $0.08 | $0.14 | $0.18 | $0.46 | $1.18 | $1.58 |
| Gross Income | $0.22 | $0.11 | $0.09 | $0.05 | $0.09 | $0.14 | $0.37 | $1.18 | $2.94 |
| Gross Margin | 41% | 31% | 59% | 38% | 40% | 45% | 45% | 50% | 65% |
| Selling, Mrktg, Research | $0.82 | $0.89 | $0.28 | $0.29 | $0.32 | $0.37 | $1.26 | $1.51 | $2.08 |
| % S.M&R | 156% | 248% | 185% | 213% | 142% | 115% | 151% | 64% | 46% |
| Total G&A | $2.01 | $3.55 | $0.78 | $0.85 | $0.95 | $0.98 | $3.56 | $4.90 | $5.44 |
| %G&A | 383% | 985% | 521% | 625% | 422% | 305% | 428% | 207% | 120% |
| Other Expenses | $1.45 | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 |
| Total operating expenses | $4.29 | $4.44 | $1.05 | $1.14 | $1.27 | $1.35 | $4.81 | $6.41 | $7.52 |
| Operating Income | ($4.07) | ($4.33) | ($0.96) | ($1.09) | ($1.18) | ($1.21) | ($4.44) | ($5.23) | ($4.58) |
| Operating Margin | - | - | - | - | - | - | - | - | - |
| Interest income | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 | $0.02 | $0.04 |
| Interest expense | $0.00 | ($0.01) | ($0.01) | ($0.02) | ($0.01) | ($0.01) | ($0.05) | $0.00 | $0.00 |
| Other income (expense), net | $0.00 | ($0.00) | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 |
| Pre-tax income | ($4.07) | ($4.34) | ($0.98) | ($1.11) | ($1.19) | ($1.21) | ($4.48) | ($5.21) | ($4.54) |
| Income tax | $0.00 | ($1.12) | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 |
| warrant modification | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 |
| Net Income | ($4.07) | ($3.22) | ($0.98) | ($1.11) | ($1.19) | ($1.21) | ($4.48) | ($5.21) | ($4.54) |
| Net Margin | - | - | - | - | - | - | - | - | - |
| EPS | ($0.69) | ($0.45) | ($0.13) | ($0.12) | ($0.13) | ($0.13) | ($0.50) | ($0.51) | ($0.39) |
| Y-o-Y Growth | - | -35% | -25% | -15% | 5% | 1185% | 12% | 1% | - |

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| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Shares O/S | 5.9 | 7.1 | 7.7 | 9.2 | 9.2 | 9.2 | 8.8 | 9.7 | 11.0 |

## APPENDIX

### BACKGROUND

Headquartered in Cedar Knolls, NJ, MYOS RENS Technology Inc. is an emerging advanced nutrition and biotherapeutics company. Their business is focused on developing and commercializing nutritional supplements, functional foods and therapeutic products aimed at improving muscle health and function. Their flagship product, Fortetropin®, is a bioactive proteo-lipid complex that is developed from fertilized egg yolk using a proprietary process. Fortetropin helps build lean muscle mass by lowering serum myostatin levels, upregulating mTor pathway activity and downregulating ubiqutin proteasome pathway activity.

***Mechanism of myogenesis (formation of muscle fibers)***

Myogenesis is initiated in myogenic cells that differentiate to form primary skeletal muscle fibers. Clinical studies have highlighted the importance of signaling in satellite cells that are responsible for muscle formation. Satellite cells are

- myogenic stem cells, which proliferate and give rise to new myoblastic cells
- responsible for development, repair and homeostasis of skeletal muscle fibers
- activated in response to stress induced by weight training or injury or in myodegenerative disease states

Satellite cells represent the primary basis of muscle repair in adults, either causing hypertrophy (cells fuse with an existing muscle fiber) or hyperplasia (cells fuse with each other).

***What is Myostatin?***

Myostatin is a myokine, a naturally occurring protein produced and released by myocytes (muscle cells). Skeletal muscle (striated muscle that excludes heart and digestive tracts) is the primary producer of myostatin. Myostatin is a member of the transforming growth factor beta (TGF-β) protein family. Myosin is formed from the precursor protein, a 375 amino acid dimer that is cleaved by proteases to a 109 amino acid domain (active form of myostatin).

The myostatin peptide binds to one of the two activin type II receptors, ActRIIA and ActRIIB. Binding to the receptors initiates an intracellular signaling cascade that results in an increase in protein breakdown and subsequent inhibition of protein synthesis. Myostatin is responsible for regulating myogenesis. Prior studies in animals with genetic deficiency for producing myostatin have shown an increased muscle mass, suggesting that myostatin is responsible for down-regulating muscle growth and development.

***Discovery of Myostatin's role in muscle development…***

In 1997, researchers published an article in the journal *Nature*[5] about their discovery of a novel member of the TGF-β family of growth and differentiation factors. This factor was expressed specifically in adult skeletal muscle and referred to as growth/differentiation factor-8 (GDF-8). In order to understand the biological function of GDF-8, they disrupted the GDF-8 gene in some mice. The result was GDF-8 null mice being significantly larger than their wild-type counterparts. Individual muscles of GDF-8 null mice weighed 2-3 times more than those of wild-type animals. GDF-8 null mice showed both muscle cell hypertrophy (increase in muscle size) and hyperplasia (increase in muscle fibers). The GDF-8 null mice were named "mighty mice". Based on the phenotype, the researchers named the discovered protein as myostatin.
(Source: www.myosrens.com)



Upper limb muscle mass in myostatin wild-type (left) and myostatin knock-out (right).
*Source:* McPherron *et al.*, 1997

***The science behind Fortetropin...***

[5] Nature volume 387, pages 83–90 (01 May 1997)

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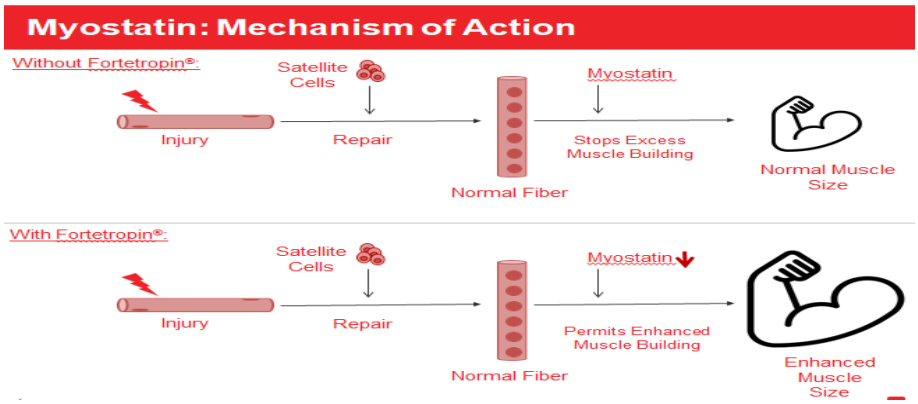
Fortetropin is a bioactive proteo-lipid complex. It is isolated from fertilized egg yolk using a patented process that preserves the various proteins and other bioactive molecules and their bioactivity.




Fortetropin®: Mechanism of Action (Source: www.myosrens.com)

A preclinical study[6] of Fortetropin's mechanism of action demonstrated regulatory effects on three important molecular signaling pathways that are responsible for healthy muscle growth.

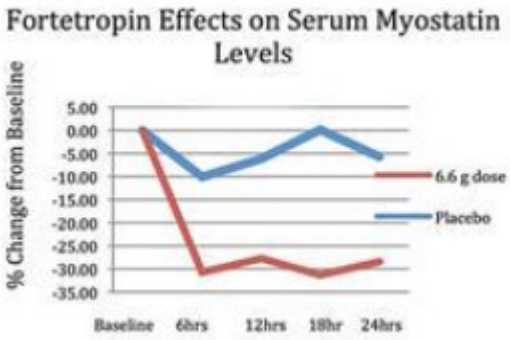
1. Myostatin pathway: We have discussed that Fortetropin® has the ability to reduce serum myostatin levels.

2. mTOR pathway (anabolic signaling): The preclinical data demonstrated that Fortetropin up-regulates the mTOR regulatory pathway. The mTOR pathway is responsible for production of a protein kinase related to cell growth and proliferation that increases skeletal muscle mass. Up-regulation of the mTOR pathway is important in preventing muscle atrophy. The study suggested that Fortetropin-based products could slow down muscle loss post-immobility and/or denervation.

3. Ubiquitin pathway (catabolic signaling): The study also demonstrated that Fortetropin reduces the synthesis of proteins in the Ubiquitin pathway. Over-production in the Ubiquitin pathway is responsible for muscle degradation.

***Clinical Studies***

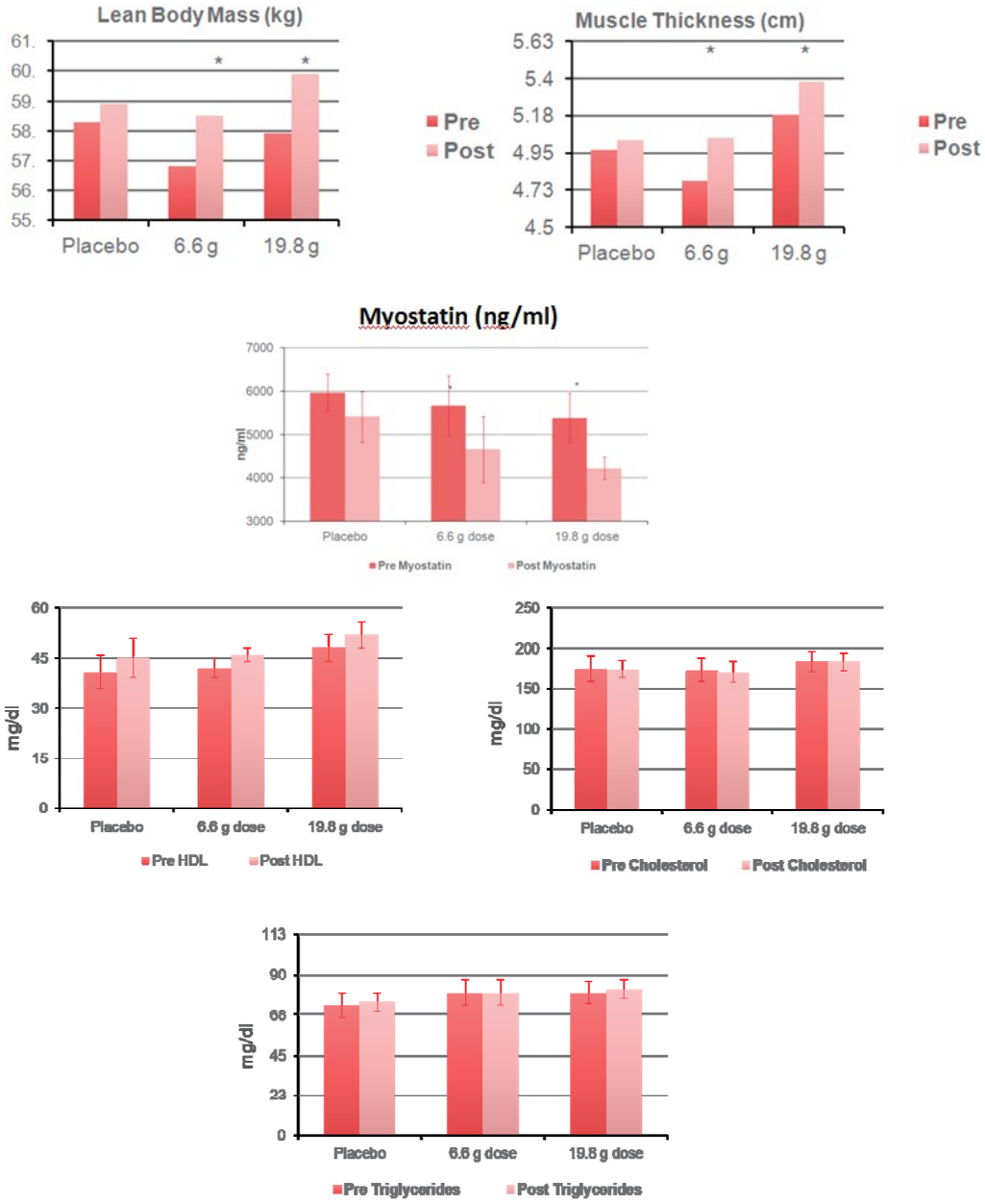
- ***Study 1:*** In March 2013, a double blind, randomized, placebo controlled, parallel, single dose study was conducted involving 24 healthy adult male subjects. Test subjects in the active arm (12 subjects) were administered 6.6g of Fortetropin mixed with vanilla fat-free/sugar-free pudding. An equal amount of vanilla fat-free/sugar-free pudding without Fortetropin was given to the placebo arm (12 subjects). Blood samples were collected at baseline (before dosing) and at 6, 12, 18 and 24 hours post-dosing for measurement of myostatin in blood. Results demonstrated greater than 30% decrease in serum myostatin levels compared to baseline during the 24-hour period. No study-related adverse events were reported. This study confirmed the beneficial effects of Fortetropin in suppressing free serum myostatin levels.




2. Sharp, Matthew H., et al. "The Effects of Fortetropin Supplementation on Body Composition, Strength, and Power in Humans and Mechanism of Action in a Rodent Model." *Journal of the American College of Nutrition* 35.8 (2016): 679-691.

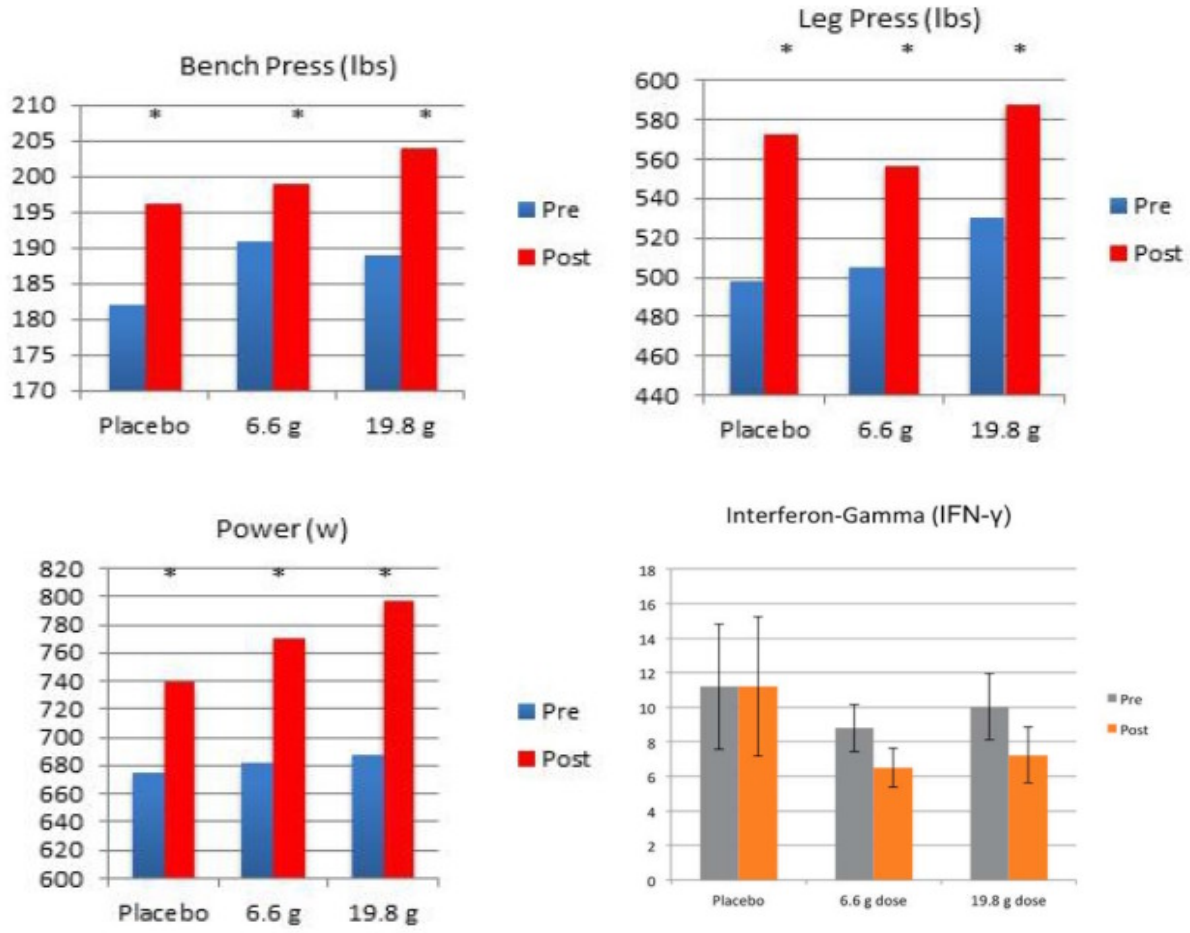
(Source: www.myosrens.com)

- ***Study 2***[7]: Another study was conducted in 2014 to investigate the effects of Fortetropin on skeletal muscle growth and strength in resistance-trained individuals. The study also aimed to investigate the anabolic and catabolic signaling effects of Fortetropin. 37 resistance-trained male subjects of similar age and physique/musculature (i.e. lean muscle mass, body mass, fat mass, muscle thickness) were randomly assigned to receive one of two Fortetropin doses, 6.6g or 19.8g (given as MYO-X), or placebo. All the men followed the same training schedule for 12 weeks. Participants completed a training protocol for muscle hypertrophy on one day and strength-training exercises on another day for two days of each week. Each group performed the same exercises. All subjects were instructed not to consume eggs for the duration of the study. Participants' strength was assessed using one repetition maximum (1RM) lift in leg and bench press exercises. Subjects completed two sets of warmup activities. Following warmup, subjects were instructed to attempt to repeat their 1RM load and allowed five attempts to do so. Anaerobic power was measured with the Monark Wingate cycle test.




(Source: www.myosrens.com)

[7] J Am Coll Nutr. 2016 Nov-Dec;35(8):679-91.




(Source: www.myosrens.com)

Results: The participants who received Fortetropin® had more lean body mass, lost more fat tissue and gained more muscle mass than those that received placebo. In addition, concentration of myostatin decreased in the blood of the participants who had used Fortetropin®. There were no significant differences observed in results of the 6.6g (1 scoop/day) group versus the 19.8g (3 scoops/day) group. Bench press, leg press and Wingate power were used to measure strength and power. The results were significantly increased from baseline in all study groups. No study related adverse events were reported.

The study also evaluated certain biomarkers including IFN-γ inflammatory cytokine, a pro-inflammatory protein that plays a critical role in inflammation and autoimmune diseases. Excess levels of inflammatory cytokines are associated with muscle-wasting diseases such as sarcopenia and cachexia. For subjects in the placebo group, no statistically significant changes in serum levels of IFN-γ were noted. However, subjects in both arms dosed with Fortetropin experienced statistically significant decreases ($p < 0.05$) in serum levels of the IFN-γ inflammatory cytokine.

Conclusion: This study demonstrated that Fortetropin has a positive role in training-induced skeletal muscle adaptation.

- ***Study 3:*** A dose response clinical study[8] was conducted by Jacob Wilson, Ph.D., Professor of Health Sciences and Human performance at the University of Tampa in May 2015. The study's aim was to examine the effects of Fortetropin (given as a supplement) at doses below 6.6g on serum myostatin levels. Researchers intended to determine the minimal effective dose in young adult males and females. In this double blind, placebo controlled clinical study, 80 male and female subjects ranging in ages between 18 and 22 were randomized into one of four dosing groups. Blood samples were collected on day 0 after a 10

[8] frailty-sarcopenia.com/docs/abstracts-2016.pdf

hour overnight fast to assess serum myostatin levels. Participants were categorized and randomly assigned into four groups such that there was no significant difference in serum myostatin concentration between groups. After assignment into the four groups, participants' blood samples were collected to establish baseline values. For one week, every day, three groups were supplemented with a separate dose of Fortetropin (2g, 4g or 6.6g) and the fourth group received a placebo. Blood samples were collected on day 7 after a 10-hour period following final supplementation as well as on day 8, 24 hours following the last supplementation. Results demonstrated that doses of 4g/day and 6.6g/day consumed for 1 week lead to a significant decrease in serum myostatin levels, while placebo and 2g/day did not. The daily use of 4g of Fortetropin, which is approximately 40% lower than the currently-recommended 6.6g dose, resulted in a statistically significant decrease in serum myostatin levels.

***Association between Muscular Strength and Mortality***

A clinical study[9] was conducted at the Karolinska Institutet's Department of Biosciences and Nutrition at NOVUM, Unit for Preventive Nutrition, in Huddinge, Sweden in 2008 to measure the association between muscular strength and mortality. In this study, 8,762 men aged 20-80 years were evaluated over an average period of 19 years. The data was normalized for age, physical activity, smoking, alcohol intake, body mass index, baseline medical conditions and family history of cardiovascular disease. The study found that there is an inverse relationship between muscular strength and death from all clinical causes and cancer that is independent from the cofounding factors. Other studies have demonstrated that muscular strength is inversely associated with all-cause mortality[10]. These data suggest that muscular strength adds to the protective effect of cardiorespiratory fitness.

[9] BMJ 2008; 337

[10] Eur J Intern Med. 2015 Jun;26(5):303-10

## HISTORICAL STOCK PRICE



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