NEVADA PHYSICAL THERAPY

Orthopedic and Sports Rehabilitation

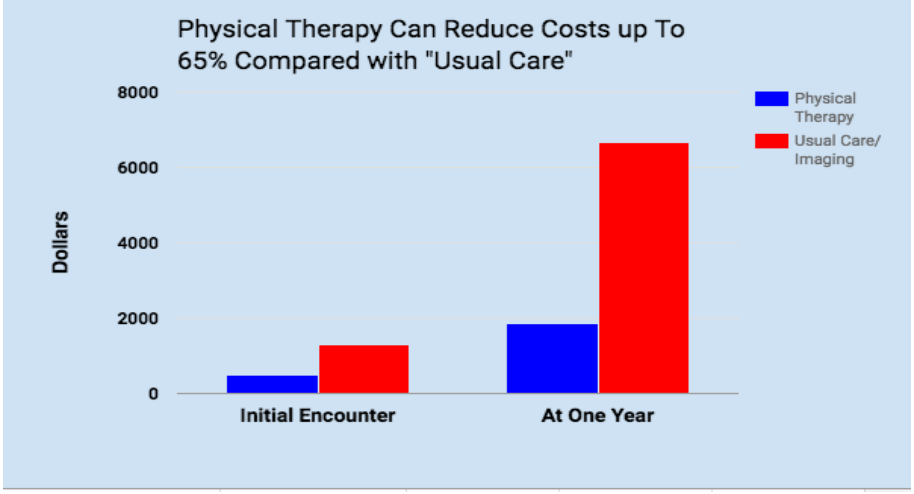
FALL/WINTER 2016

At Nevada Physical Therapy, we are dedicated to providing the best possible care for our patients. This is built on both a strong hands-on approach and progressive research-based protocols. Not content with status-quo, we are constantly pushing our field forward and striving to create the highest standard of care possible.

NEWS AND UPDATES FROM NVPT

Summer has come and gone and with the start of a new academic year, we couldn't help but break out the science books and graph paper ourselves! We are proud to announce a new and improved tendinopathy protocol based off the most up-to-date research available. If you've never heard of Dr. Jill Cook, Phd., Google her and give a few of her podcasts a listen; brilliant researcher out of Australia! This issue will shine some light on the current leading research in the field of tendinopathy and tendon injuries, as well as new exercise protocol progressions and how we have worked to implement them into our rehabilitation programs! Additionally, we'll cover current conversations in the PT world, new concepts in research, and we'll cover a few PT facts that we think every medical provider should know! **Like this one**: Did you know that referring to physical therapy first for uncomplicated low back pain can reduce costs by nearly 65% compared to ordering imaging and "usual care"? After a year these savings are even more dramatic! Not to mention that if pain exceeds 90 days, therapy can be a welcome intervention compared to sustained opiate use. Check the graph below and visit APTA.ORG for more details!

Inside This Issue:



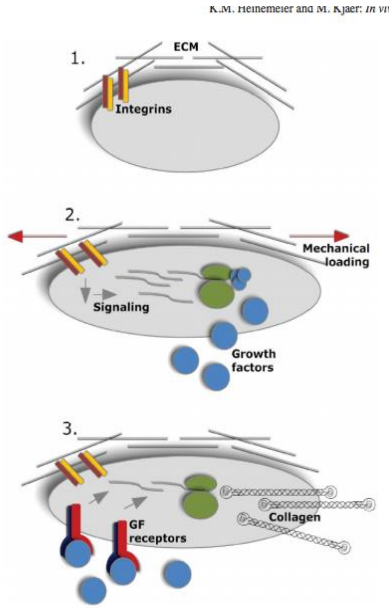
Tendon Science

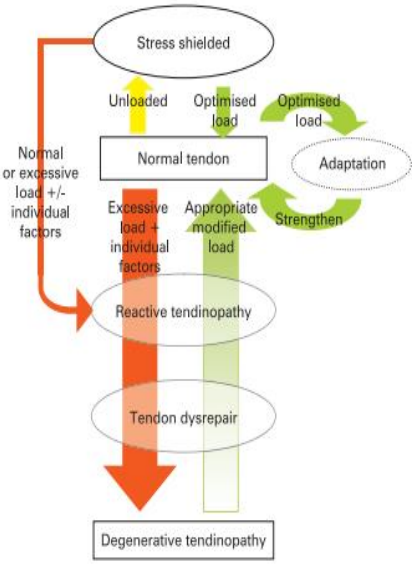
So what do we really know about tendons? Well, we know they are remarkable tough and take an exceptionally long time to adapt. In fact, most protocols are 12 weeks in length ***at a minimum***! Does that mean your patient needs to come to PT for three months? Not at all. But we do spend a considerable amount of time educating them on the importance of completing the home program we implement for just that reason!

One of the key concepts in tendinopathy management is establishing appropriate (key word!) mechanical loading. We can separate loading of tendons into two primary categories: **cyclical** (bodyweight such as running, cycling, jumping) and **mechanical** (weight training). Cyclical loading has been well-established to push tendons down a degenerative cascade; creating increased tenocyte rounding, disordered collagen, neuronal ingrowth, etc. Mechanical loading does just the opposite. Heavy slow resistance (HSR) has been shown to kick off anabolic tendon cascades with key expression of growth factors and NEW collagen synthesis (upper center photo).

Tendons must be loaded to heal. In fact unloaded tendons are classified as "mechanically-compromised" and actually become mushy! If a clinician has a poor understanding of how tendons respond to loading after being unloaded, they may inadvertently push them down a reactive/degenerative cascade.

In summary, if you want to be an endurance athlete, you need to balance it with a heavy mechanical loading protocol! ***We must optimize load to allow tendons to adapt and strengthen***! If we exceed this, we often set the stage for degeneration. (upper right photo)



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Heavy Slow Resistance Versus Eccentric Training as Treatment for Achilles Tendinopathy: Randomized Controlled Trial
Rikke Beyer, Mads Kongsgaard, Birgitte Hougs Kjær, Tommy Ølhenschlæger, Michael Kjær and S. Peter Magn
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The online version of this article can be found at:

While eccentric protocols have often been treated as the "gold standard" for managing tendon injuries, new research has shown that heavy slow resistance (a 4-5 second eccentric AND concentric contraction) shows marked improvement in patient satisfaction at 12 weeks (100% for HSR group, 80% ECC) and at 52 weeks (96% for HSR and 76% for ECC). So while both groups showed improvement, the HSR group was a clear winner! Previously we discussed the need for mechanical loading to kick off new collagen formation, it is also important to note that both progressions will accomplish that as it is becoming clear that it is the **time under load** that is key!

So why the higher patient satisfaction? The authors believe it is due to the much lower time commitment for the HSR program. We implement Beyer's protocol, which calls for 4 sets of 6 reps 3-4 times per week for a total of 3-4

(cont'd)

exercises by the time it is completed. The original Alfredson protocol (Conventional Eccentric Protocol) called for 3x15 reps 1-2 times per day! Who has the time?!

A typical Heavy Slow Resistance Protocol designed by Beyer might look like this: Weeks 1 and 2: 3x15, Weeks 3-4: 3x12, Weeks 5-6: 4x10, Weeks 7-8 4x8, Weeks 9-12: 4x6. The original Alfredson protocol was also performed on ***untrained individuals*** which is important to note when designing a program for elite athletes to weekend warriors!

If you have a patient suffering from a partial tendon tear, "tendonitis", or tendinopathy we hope you will let us show that this truly is the most advanced protocol in Sports Medicine!

Three-Dimensional Mathematical Model for Deformation of Human Fasciae in Manual Therapy

Hans Chaudhry, PhD; Robert Schleip, MA; Zhiming Ji, PhD; Bruce Bukiet, PhD; Miriam Maney, MS; and Thomas Findley, MD, PhD

The Phelps Back Hickey Protocol

Every Olympics season a new passive modality is introduced to the public. First it was Kinesio-Tape with women's volleyball, this year it was cupping (therapeutic hickeys??) with Michael Phelps! So what's the deal, do these trendy treatments work??

Well, sort of. Here's what we DO know: We cannot create enough force with our hands (or those glorified butter knives) to change the shape or configuration of fascia. The seminal work by *Chaudhry et al.* above is a great read on this. **The take away**: 1000s of pounds of pressure to create 1% deformation of fascia. That's a lot for a little. Additionally, we can't even agree on what a trigger point is let alone reliably locate them between practitioners! So any modality based on "releasing fascia, improving sliding surfaces, or treating trigger points" stands in blatant contrast of the current research.

"***But I feel better after I foam roll…jab a lacrosse ball in my back…get shellacked in tape…etc!***" We've heard it a thousand times. So what does it mean? It means these modalities *may work* but they likely are not working the way we say they are. The research consistently demonstrates that the nervous system is running the show. When we say we are stretching our hamstrings what we should really be saying is "***we are adding sustained neurological input into a perceived tightness in our hamstrings which is likely due to a facilitated nervous system in the attempt to improve tolerance to being at an end range position and down-regulate that neuronal loop***" but that's a mouthful. So we just say stretching but again, research shows we are not that delicate and it is nearly impossible to create true lengthening of the musculoskeletal unit. Perhaps a conversation for another letter!

So where were we? Ah, the nervous system. What we are seeing consistently is that when we add deep, nociceptive input to the central nervous system, whether it be cupping, a lacrosse ball, or scraping someone with a butter knife, we can see a decrease in nervous system facilitation, decreased subjective pain, and improved motion. The precise mechanism is not well understood but it suggests a central governor theory is in play.

It should be noted that, in comparison, exercise worked better than all of those modalities especially in regard to improving blood flow so maybe we can all agree to put the needles and butter knives away and just get our patients moving??

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Did you know the Center for Disease Control reports a 4-fold increase in opoid prescription even though the amount of "reported pain has not increased"? The CDC recommends physical therapy to help combat this epidemic!

Visit **MoveForwardPT**.com for more.

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