Sean

Baseline Time to Stabilization Identifies Anterior Cruciate Ligament Rupture Risk in Collegiate Athletes

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It is imperative to have functional screening assessment tools to perform in the clinic to assess progress, make predictions and use as patient educational tools. This study looks at the correlation between time to stabilize after a single leg jump landing and risk of ACL rupture in collegiate athletes. This was a prospective cohort study with a sample of 264 participants. Time to stabilize was measured for a forward, backward, medial and lateral jump onto a force plate. After testing, the participants were followed for 3 years and ACL injuries were reported. Of the total participants, 9 sustained non-contact ACL injuries. The study compared data of ACL injured versus uninjured athletes, as well as comparing the injured limb with the uninjured limb in ACL injured athletes.

Results showed that injured athletes demonstrated a significant 0.49 seconds (50% longer) longer time to stabilize during a backward jump landing compared to the uninjured group. Time to stabilize for injured and uninjured athletes was 1.58 $\pm$ 0.39 secs and 1.09 $\pm$ 0.52 secs respectively. The authors conclude that backward jump time to stabilize can be used to identify individuals at risk for an ACL tear, with a cutoff score of $\geq$1.19 secs identifying 89% of individuals with 70% specificity.

Although ACL ruptures are dependent on multiple factors, time to stabilize dynamic stability is a good screening tool to identify individuals at risk for ACL tears, as well as a good rehab goal to set for patients wanting to return to sport after an ACL reconstruction. This article also provides information to use as a patient educational tool to give them a better understanding of where they should be prior to returning to sports.

Alex

Goom TS, Malliaras P, Reiman MP, Purdam CR. Proximal Hamstring Tendinopathy: Clinical Aspects of Assessment and Management. J Orthop Sports Phys Ther. 2016;46(6):483-93. DOI: 10.2519/jospt.2016.5986

This article reviews current concepts regarding proximal hamstring tendinopathy, including differential diagnosis, assessments specific to the tendon and associated biomechanics, interventions and progressions. The information presented is based on current literature of tendinopathy, tissue healing time and progressive loading programs.

The article does well in describing the anatomy, biomechanics and pathophysiology of the hamstrings within a functional context of activities of daily living and sports related activities. Furthermore, the authors include differential diagnoses to be made, diagnostic testing and treatment approach based on the ICF model, as well as appropriate modification of activities outlined in relation to specific patient presentations.

The authors make detailed recommendations regarding rehabilitation consisting of exercise prescription in phases defined through specific parameters regarding volume, intensity, frequency and patient response. Four phases are outlined: 1) isometric hamstring load 2) isotonic load with minimal hip flexion 3) isotonic exercises in positions of increased hip flexion (70°-90°) 4) energy storage loading. Each phase is described in detail and supplemented with figures including pictures of each exercise.

The authors list the lack of randomized controlled trials substantiating these recommendations as a limitation, however, there are 98 references to relevant literature supporting said recommendations. This article is a perfect example of the incorporation of the three aspects of evidence-based practice (literature, expertise, patient). The authors did an excellent job at compiling the most current literature regarding tendinopathy and rehabilitative tendon loading and applied it to a well-defined patient population. The latter aspect stands out, as many studies fail to establish specific parameters for the population in regards to clinical presentation, often times resulting in subpar clinical applicability, or over-generalized outcomes that are not pathology or impairment specific. Due to the specificity of patient presentation and parameters, the recommendations in this article are easily applied clinically and provide an excellent reference point to guide assessment and treatment.

Oksana

Enhance placebo, avoid nocebo: How contextual factors affect physiotherapy outcomes.

Marco Testa, Giacomo Rossettini. April 2016. Manual Therapy.

Placebo- “I shall please” is created by the positive psychosocial context that is capable on influencing the patient’s brain. Nocebo- “I shall harm” is the result of the negative ritual and therapeutic act on the patient’s mind and body. Both placebo and nocebo are capable of modulating pain, movement patterns, influence brain activity, and so much more. It was found that a laboratory coat and tailored clothing were ranked respectively most professional and preferred by patients with low back pain. Patients were also less satisfied if the professional appearance was poor and if PTs wore jeans during clinical practice. These perspectives influence how one responds to treatment.

Expectation is a significant prognostic factor in musculoskeletal pain. A patient's prior experience of care is also a high contributing factor. Acute patient reported higher satisfaction with physical therapy features such as expertise, reputation, level of training and professional behavior than those with chronic conditions. Gender also has a role. The main predictors of satisfaction for **male** patients are ***the therapist*** and ***treatment outcomes***, whereas **female** patients the most important factors are ***organization*** and ***communication***.

As a therapist we have learned that our environment, facial expressions, our presentation, knowledge and compassion play a huge role in patient satisfaction and outcomes. We need to continue to put the patient first and share the time that we never have with them. Being a PT is an art and balancing act. We can only do the best we can.

<u>Laura</u>

The effects of neurodynamic straight leg raise treatment duration on range of hip flexion and protective muscle activity at P1

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Journal of Manual and Manipulative Therapy, 2016; 24:1:14-20

Neurodynamic assessment and treatment has evolved to become an essential component of physical therapist practice to effectively evaluate pain and dysfunction. There are many theories of neurodynamic treatment effects, including providing a mechanical effect that improves the vascular dynamics, axonal transport systems, and viscoelasticity of nerve fibers and connective tissues, as well as providing a central desensitization effect with inducing hypoalgesia. Hanney et. al. has recently published a randomized, same subject crossover trial in the recent issue of Journal of Manual and Manipulative Therapy on evaluating the effects of a neurodynamic treatment on hip flexion ROM, electromyographic (EMG) activity of semitendinosus and pain during a passive Straight Leg Raise (SLR), a commonly used test for mechanosensitivity and elasticity of the nervous system.

Twenty-six asymptomatic subjects were randomized to either two interventions: one or two sets of 3 minute neurodynamic treatments at the first point of pain (P1) during the passive SLR test. Hip flexion ROM and EMG activity of the semitendinosus was measured with the SLR test before and after treatment. Results showed that there was no significant difference between the treatment groups for hip flexion and EMG of semitendinosus at P1, no significant difference within treatment groups for EMG of semitendinosus at P1, but there was a significant difference within treatment groups in hip flexion ROM at P1 (mean increase of 6.7 and 5.1 degrees for the 3x1 minute and 3x2 minute groups, respectively). The authors conclude that there is no difference in treatment duration between the two groups on these measures, therefore using a shorter duration would have a similar effect on pain-restricted movement.

The results of the study, although not the primary objective, showed a significant improvement in hip flexion ROM after both treatment durations. The authors note an important point that the results of the study might be the product of elastic deformation and not primarily hypoalgesia, but these results are only speculation due to lack of control group (could either include no treatment or static hold at end range SLR without addition of mobilizations). The study also chose the extremity by leg dominance, not by evaluating symmetry of the passive SLR between both legs, which is an important evaluation component when diagnosing a normal vs. abnormal response. The authors could potentially miss an important treatment effect or confound their results by not evaluating this component and not providing an entirely homogenous sample group.

The authors also fail to describe in detail the specific mobilization technique and rationale used in this study, which would also be helpful for clinicians to apply the results of this study. The authors seem to be using a joint technique with the nervous system placed at a position of tension. The neurodynamic treatment described as the leg positioned at P1 of the passive SLR, with hip oscillations at end rage (Grade IV+) to a frequency of 1.5 Hz. There are a wide variety of direct neurodynamic treatment approaches and vigor including addressing both mobilization of the neural structures and treatment of the interfacing structures, therefore it is difficult to relate one technique as an overall representation of neurodynamic treatment. Applying the technique used in this study cannot be utilized to describe neurodynamic treatment in general, only this particular technique of hip oscillations.

<u>Nick</u>

Grindem H, Synder-Mackler L, Mosknes H, Engebresten L, Arna Risberg M. Simple decision rules can reduce reinjury risk by 84% after ACL reconstruction: the Deleware-Oslo ACL cohort study. *Br J Sports Med*. 2016; 50:804-808

In the literature review, the authors highlight the prevalence and effects of ACL injuries, including the increased risk for further injury even after ACL-reconstruction (ACL-R). They reference research that has shown that within 5 years upwards of 50% of individuals who have had ACL-R may undergo meniscus surgery, significantly increasing their risk for future knee osteoarthritis. In light of this, predicting (and subsequently preventing) knee injury following ACL-R is of critical importance.

The purpose of this study was therefore to examine the association between knee injury after ACL-R and return to level 1 sports, timing of return to level 1 sports, and knee function prior to return to level 1 sports.

106 patients who underwent ACL-R were included in the study. Amongst other inclusion criteria, patients had to have preinjury participation in level 1 or level 2 sports at least twice weekly. Patients were excluded if they had current or previous injury to the opposite knee, or other prior injury to the knee receiving reconstruction. All patients underwent a 3-phase post operative rehabilitation program. Sports participation and knee re-injury rates were recorded following ACL-R via monthly online surveys and clinical follow ups at 6, 12, and 24 months post ACL-R. A comprehensive test battery consisting of isokinetic quadriceps strength testing, 4

single leg hop tests and two self report measures was performed at baseline as well as 6 and 12 months post ACL-R. Patients were considered as having passed the test batter if there was >90% symmetry in quadriceps strength and hop testing performance.

The results portion of this study is incredibly dense in statistics. 24% of patients sustained a knee re-injury at a median of 13 months post ACL-R. 2 of 26 patients (7.7%) who did not return to level 1 sports experienced a knee reinjury, compared to 22 of 74 (29.7%) who did return to level 1 sports. During the first 9 months following ACL-R , an earlier return to level 1 sports was significantly associated with increased occurrence of reinjury. Of the 55 patients who failed return to sport criteria, 21 (38.2%) experienced a reinjury, compared to only 1 of 18 (5.6%) who passed return to sport criteria. Quadriceps strength deficit when returning to sport was shown to be significantly associated with reinjury occurrence.

Practically, this paper serves to help clinicians appropriately educate their patients on risk of reinjury with returning to level 1 sports and the necessity of allowing appropriate healing time *and* passing appropriate objective return to sport criteria. Specifically, patients should wait *at least* 9 months before returning to level 1 sports and possess >90% isometric quadriceps strength and hop test performance. Passing such return to sport criteria may take an extended amount of time, as only 14.3% who returned to sport before 12 months passed the test at the 6 month mark, and only 55% who returned to sport after 12 months passed the test at the 12 month mark.