



## **Performance Enhancement in Rehab**

**Daniel Lorenz, DPT, ATC**

### **Presentation Objectives:**

1. Identify evidence-based recommendations regarding sets, repetitions, and loading parameters to build hypertrophy, strength, power, elastic strength, and speed.
2. Classify the physical qualities of performance – strength, power, elastic strength and speed – in order to design effective programming to rebuild the recovering athlete.
3. Identify specific screening measures to determine physical readiness for performance enhancement training.
4. Explain how to design programming that addresses specific deficits discovered during functional testing measures.
5. List specific testing measures that the athletic trainer can utilize to objectively measure athlete status and progress.
6. Apply a functional testing algorithm that the athletic trainer can utilize to maximize safe return to sport.

### **Speaker Biography:**

Dr. Dan Lorenz, DPT, PT, ATC/L, CSCS is an owner and Director of Clinical Operations for Specialists in Sports and Orthopedic Rehabilitation, a private practice outpatient physical therapy facility with two locations in the Kansas City metro area. Dr. Lorenz has a B.S in Health Sciences with an Emphasis in Athletic Training from Grand Valley State University in 1999 and a M.S in Physical Therapy from GVSU in 2001. In 2009, Dr. Lorenz earned a Doctor of Physical Therapy from the University of St. Augustine. From 2004-2005, Dan completed the Duke University Sports Physical Therapy Fellowship. Following the stint at Duke, he was an assistant athletic trainer and physical therapist for the Kansas City Chiefs from 2005-2007. Currently, he is the Chair of the Sports Performance Enhancement Special Interest Group (SIG) for the Sports Section of the APTA. Dr. Lorenz has presented numerous times at national and state conferences on sports medicine, focusing on performance enhancement in the terminal phases of rehabilitation. Previously, he has been an adjunct faculty at Rockhurst University, teaching a sports physical therapy elective for 3<sup>rd</sup> year physical therapy graduate students. Additionally, he has been published several times in peer-reviewed journals including *Strength and Conditioning Journal*, *International Journal of Sports Physical Therapy*, and the *Journal of Sports Rehabilitation*, among others. Dr. Lorenz has also been a reviewer for numerous publications, including *Strength and Conditioning Journal*, *Journal of Athletic Training*, *Journal of Sport Rehabilitation*, and the *International Journal of Sports Physical Therapy*. In 2012, Dan founded a 501c(3) non-profit, The ASPIRE Foundation, focusing on injury prevention and education for



young athletes. Dan and his wife Jo Ann have been blessed with three children – Luke (6), Mallory (4), and Justin (1) and reside in Olathe, KS.

### **Knowledge Gap:**

Return to sport data for ACL reconstructions, SLAP repairs, labral repairs, and rotator cuff tears in the athlete are not optimal, as low as 50-60% in some diagnoses and at best 85-90% for others.<sup>1,2,3,4,7,10,12</sup> Furthermore, post return-to-play functional and strength assessments routinely show asymmetry in affected vs non-affected limbs, particularly with ACL-reconstruction.<sup>6,7,9</sup> Therefore, one must question our current return to sport guidelines as well as our training methods to returning athletes to competition.

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2. Antoni M, Klouche S, Mas V, et al: Return to recreational sport and clinical outcomes with at least 2 years follow-up after arthroscopic repair of rotator cuff tears. *Ortop Traumatol Surg Res* 102(5):563-567, 2016
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4. Marshall NE, Keller RA, Lynch JR, et al: Pitching performance and longevity after revision ulnar collateral ligament reconstruction in Major League Baseball pitchers. *Am J Sports Med* 43(5):1051-1056, 2015
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9. Ithurburn MP, Paterno MV, Ford KR, Hewett TE, Schmitt LC. Young Athletes With Quadriceps Femoris Strength Asymmetry at Return to Sport After Anterior Cruciate Ligament Reconstruction Demonstrate Asymmetric Single-Leg Drop Landing Mechanics. *Am J Sports Med*. 2015;43(11):2727-2737.
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12. Lentz TA, Zeppieri G Jr, Tillman SM, et al. Return to preinjury sports participation following anterior cruciate ligament reconstruction: contributions of demographic, knee impairment, *J Orthop Sports Phys Ther*. 2012;42(11):893



## **Student Athlete and Mental Health**

### **Dr. Ram Chettiar**

#### **Presentation Objectives:**

7. Participants will be able to identify trends in mental health risk in athletes.
8. Participants will have an understanding of risk factors for mental health problems.
9. Participants will be familiar with how to screen for suicidal thoughts.
10. Participants will develop an understanding of what to do when an athlete is at risk for mental health problems.

#### **Speaker Biography:**

Ram Chettiar, DO, is a Child and Adolescent Psychiatrist at Children's Mercy Kansas City, with faculty appointments at the University of Missouri-Kansas City and the University of Kansas Medical Center in Pediatrics and Psychiatry. He earned his undergraduate degree from Creighton University in Exercise Science and his medical degree from the Kirksville College of Osteopathic Medicine. He completed his residency in Psychiatry from the University of Missouri-Kansas City and his fellowship in Child and Adolescent Psychiatry from the University of Kansas Medical Center. He treats a variety of mental health conditions and provides consultation services at Children's Mercy Hospital.

#### **Knowledge Gap:**

Suicide is the second leading cause of death in adolescents and young adults (1). Athletes, particularly student-athletes have unique risk factors, which may make them more susceptible to mental health impairment (2). The high expectations of young athletes in addition to the stressors inherent in organized sports – including risk of injury, time constraints, overtraining, financial concerns, and pressure from parents and coaches – expose athletes to additional mental health risks. Athletic trainers can play a crucial role in the education, early recognition, and effective referral to the mental health system for at-risk athletes (3). Raising awareness of mental health disorders among student-athletes may allow for better outcomes including quality of life and reduction in suicide in this unique cohort.

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## **Mentally Tough: An Introduction to Common Mental Health Challenges in Athletes and How We Support Them**

**Dr. Michael Page**

### **Presentation Objectives:**

1. Recognize signs and symptoms of the more common mental health conditions and an introduction to Depression, Anxiety and Attention Deficit-Hyperactivity Disorder
2. Understand drug and nondrug approaches and be able to identify drugs used in the treatment of common psychiatric and mental health conditions
3. The role of the athletic trainer in recognizing the need for referral and later, their role for patients on drug therapy and the implications of that therapy in sport.

### **Speaker Biography:**

Dr. Michael Page was born and raised in Kansas where he was able to complete his undergraduate studies at Kansas State University in Nutrition Sciences and Medical School training at the University of Kansas-Medical School. He also completed both his Family Medicine Residency and Sports Medicine Fellowship at Via Christi Hospitals in Wichita, KS and is board certified in both.

His interest in medicine started through athletics as he was diagnosed with a medical condition that prohibited him from playing some of his favorite sports and was immersed into the medical field with seeing a primary care physician, specialists and receiving imaging studies. This sparked his interest in medicine and eventually led him into the field of Family Medicine and obtaining a fellowship in Sports Medicine. He started his education at Kansas State University and has now returned to practice professionally at the place that allowed me the opportunities to pursue my career.

The topic of mental health is very interesting to him as it is an area that we see the difficulties and manifestations of depression and anxiety in our students, every day. Additionally, his wife is a licensed professional counselor, and they have served together in counseling others.

### **Knowledge Gap:**

Mental health disorders are becoming more apparent and the rate of mental health disorders continues to rise. Athletes are not immune to these issues and early recognition, intervention and support can help our athletes not only succeed in their sports, but thrive in their day-to-day activities.



## **The Use of Blood Flow Restriction Exercise in Rehabilitation: From Injury to Full Function**

**Dr. Paul E. Luebbers, PhD, CSCS\*D**

**Erica Engelhaupt, MS, LAT, ATC**

### **Presentation Objectives:**

1. Attendees will be able to explain and summarize the development of blood flow restriction training, in particular, its use in rehabilitation.
2. Attendees will compare a progressive model of rehabilitation utilizing BFR with traditional rehabilitation progressive models.
3. Attendees will describe the modality setup and correct adjustment of a personalized tourniquet system for use in a rehabilitation training protocol.

### **Speaker Biography:**

Paul Luebbers is a Professor and the Chair of the Health, Physical Education, and Recreation Department at Emporia State University, in Emporia, KS. He received his Doctorate in Exercise Physiology from Virginia Commonwealth University, in Richmond, VA and taught in the Department of Kinesiology at Northern Illinois University prior to returning to his home state of Kansas. Paul has been an active member in the American College of Sports Medicine (ACSM) and the National Strength and Conditioning Association since 2001. In 2002, he earned recognition as a NSCA Certified Strength and Conditioning Specialist (CSCS). Currently, he is a member of the NSCA Research Consortium and served for three years on the Executive Council for the NSCA Nutrition, Metabolism, and Body Composition special interest group. Paul also holds a Level 1 USA Track & Field certification and has coached track and field at the middle school, high school, and collegiate levels. He has a wide range of research interests and has published in the areas of blood flow restriction training (BFR), anaerobic power, resistance training, metabolism, and nutrition.

Erica Engelhaupt is the assistant athletic trainer at Emporia State University. She received her Master's Degree from Fort Hays State University in Health and Human Performance. She is certified in Instrument Assisted Soft Tissue Mobilization (IASTM) and in January, she became certified in Blood Flow Restriction (BFR). She works primarily with the women's soccer and women's basketball teams at ESU as well as overseeing the majority of all other sports. She has had the opportunity to utilize BFR on several ESU athletes.

## Knowledge Gap:

Blood flow restriction (BFR) training has been in use across healthy and debilitated populations for over 40 years. However, it has only been during this current decade that BFR has emerged as a viable rehabilitation modality for certain musculoskeletal injuries. Interest in this rehabilitation and training technique continues to grow, particularly in athletics, as it has demonstrated potential to minimize disuse muscular atrophy and allow injured athletes to begin strength training earlier in the rehabilitation process.<sup>1-3</sup> Athletic trainers, certified in BFR rehabilitation training, may be able to decrease the return to play time of the athletes under their care.<sup>4,5</sup>

1. Day B. Personalized Blood Flow Restriction Therapy: How, When and Where Can It Accelerate Rehabilitation After Surgery? *Arthroscopy*. Aug 2018;34(8):2511-2513.
2. Pearson SJ, Hussain SR. A review on the mechanisms of blood-flow restriction resistance training-induced muscle hypertrophy. *Sports medicine*. Feb 2015;45(2):187-200.
3. Slysz J, Stultz J, Burr JF. The efficacy of blood flow restricted exercise: A systematic review & meta-analysis. *J Sci Med Sport*. Aug 2016;19(8):669-675.
4. Vanwye WR, Weatherholt AM, Mikesky AE. Blood Flow Restriction Training: Implementation into Clinical Practice. *International Journal of Exercise Science*. 09/01 2017;10(5):649-654.
5. Mason MJS, Owens JG, Brown LWJ. Blood Flow Restriction Training: Current and Future Applications for the Rehabilitation of Musculoskeletal Injuries. *Techniques in Orthopaedics*. 2018;33(2):71.



## **Foundations of Pain Science**

**David Crotts, DPT**

### **Presentation Objectives:**

1. Understand the common misconceptions regarding pain.
2. Acknowledge the paradigm shift from treating the body to treating the brain.
3. Recognize the symptoms of central sensitization.
4. Understand the principles of Therapeutic Neuroscience Education (TNE)
5. Be able to apply the concepts of TNE in a clinical setting.

### **Speaker Biography:**

A native of Cimarron, Kansas, David began his education at Fort Hays State University where he earned his bachelor's degree in exercise science in 1996. He continued his education at Creighton University and earned his doctorate degree in physical therapy in 2001. David is experienced in treating a wide array of patients with varying diagnoses including sports injuries, worker's compensation injuries, and general orthopedic, musculoskeletal, and neuromuscular disorders. David is committed to practicing evidence-based physical therapy with an emphasis on manual therapy. In October 2011, he completed his specialty certification in orthopedic manual therapy of the spine, and was awarded the Certified Orthopedic Manual Therapist designation by the International Academy of Orthopedic Medicine. He has been a member of the American Physical Therapy Association since 1998 and the National Strength and Conditioning Association since 2000.

### **Knowledge Gap:**

In recent years there has been a plethora of research on pain, specifically defining what pain is and how it should be managed. The biggest challenge to the clinician is accepting that pain is a brain construct. Most practitioners follow the biomedical model which tells us to use our knowledge of anatomy, physiology, biomechanics, and the like to treat the body (vs. treating the brain) in order to manage pain. In fact, specifically as it relates to chronic pain, the latest research tells us that we should start to manage pain by educating our patients about pain, i.e. neuroscience education. This short lecture will introduce the clinician to some of the key concepts behind pain science and therapeutic neuroscience education.



# **Maximizing Muscle Potential: Dry Needling for Myofascial Trigger Points**

**Cassandra Mains, DPT**

## **Presentation Objectives:**

1. Define dry needling and myofascial trigger points.
2. Describe how athletic trainers can utilize dry needling directly or indirectly.
3. Describe trigger point abnormalities that affect muscle performance and pain.
4. Discuss the biomechanical and neurophysiological changes in muscle after dry needling.
5. Explore current research regarding dry needling and manual trigger point release.
6. Discuss the impact of dry needling on maximizing performance and improving diagnostic limitations.

## **Speaker Biography:**

Cassie Mains has a Doctorate in Physical Therapy from Creighton University. She has worked for Russell Regional Hospital for 8 years with a focus in outpatient orthopedics. She is Fascial Movement Taping Certified, provides instrument assisted manual therapy, dry needling, as well as other formal therapy treatments for patients of all ages. She is a Certified Myofascial Trigger Point Therapist for dry needling competencies through Myopain Seminars, with 100 hours of dry needling education. Cassie has provided dry needling services at Russell Regional Hospital since 2015. She is a Certified Clinical Instructor and has trained students in physical therapy for 7 years. She has also been a member of the American Physical Therapy Association since 2009.

## **Knowledge Gap:**

Health care professionals in the US have utilized dry needling since the 1970s, but recently legislation has been expanded to include dry needling competencies in statutes for physical therapy, athletic trainers, and occupational therapists. Due to the recent advancement in treatment training and options including dry needling, expanding knowledge of manual therapy and limitations that could benefit from dry needling are important. Athletic trainers could benefit from knowledge of new options of how to maximize muscle tissue performance by directly treating clients or by recommending for referral. Continuing education is required for health care professionals to stay up to date on current research, to promote interdisciplinary care, and to allow information expansion beyond the basic curriculum. Dry needling fills this gap in education.