

Division Details

Division Data Summary

Research and Training Details

Number of Faculty	7
Number of Joint Appointment Faculty	1
Number of Research Students	2
Number of Support Personnel	6
Direct Annual Grant Support	\$435,555
Peer Reviewed Publications	20

Clinical Activities and Training

Number of Clinical Staff	3
Number of Clinical Fellows	2
Outpatient Encounters	5,000

Division Photo



Row 1: C Quatman-Yates, K Berz, T McCambridge
Row 2: M Paterno, N Edwards, G Myer, T Hewett, M Shaffer

Significant Accomplishments

Research team wins Nicolas Andry Career Achievement Award

The research team of Tim Hewett, PhD, Greg Myer, PhD, Mark Paterno, PhD, Carmen Quatman, PhD, and Kevin Ford, PhD, received the 2012 Nicolas Andry career achievement award by the Association of Bone and Joint Surgeons (ABJS). The award recognized the group's work on the paper titled, "A Systematic Approach to Prevent Anterior Cruciate Ligament Injury." The ABJS recognizes individuals through this award who have conducted and published work pertaining to the musculoskeletal system that has significantly contributed to orthopaedic knowledge and practice.

Michael Shaffer, DO recognized by *Cincy Magazine*

Michael Shaffer, DO was honored in the December 2011 issue of *Cincy Magazine* by being named one of the top Sports Medicine doctors in the Tri-state area. Shaffer has special interests in injury prevention, altered foot mechanics, and manipulative treatment of spine and pelvis related dysfunction. He specializes in the evaluation and treatment of female athletes and also serves as the division's Fellowship Director.

Division lands another NFL Charities Award

For the fifth time in six years, the Division of Sports Medicine received a grant from the National Football League (NFL) charities organization. The project, titled "Neuromuscular Predictors of Outcome following Anterior Cruciate Ligament Reconstruction: a Prospective and Longitudinal Study of the Effect of Meniscus Injury," will be led by Paterno. Other division staff participating with the project include Hewett and Laura Schmitt, PhD, co-investigators; Myer and Ford, associate investigators; and Staci Thomas, coordinator. Anterior cruciate ligament injuries combined with meniscal pathology are among the most disabling injuries sustained by

athletes. The goal of the project is to understand the mechanisms underlying outcomes following anterior cruciate ligament reconstruction (ACLR) in a young, athletic population with meniscus injury.

Division Highlights

Nicholas Edwards, MD, MPH

Dr. Nicholas Edwards received second year funding for his project titled "Effects of physical activity on cardiovascular risk factors in youth". This project will help determine the best methods for preventing children from developing heart problems as they mature.

Jeff Taylor-Haas, PT, MPT, OCS, CSCS

Jeff Taylor-Haas was awarded a grant from the American Physical Therapy Association - Ohio Component. The purpose of this prospective outcome study is four-fold:

1. Analyze the relationship among hip strength, foot structure, two-dimensional running gait, quality of life, and presence of tibial stress fracture in adolescent runners (ages 12 to 19) at both the time of the initial physical therapy evaluation and the discharge physical therapy re-evaluation.
2. Assess the effect of foot structure on tibial stress fracture location
3. Assess the relationship among demographic variables, such as patient age and length of time participating in running, and the presence/location of a tibial stress fracture
4. Assess the effect of physical therapy interventions on the dependent variables of hip strength, two dimensional running gait, and quality of life.

Catherine Quatman-Yates, PhD

Catherine Quatman-Yates, PhD, received two grants in fiscal year 2012. The first grant titled "The Clinical Utility of the Balance Error Scoring System", is funded by the University Research Council (URC) Postdoctoral Fellow Research Program at the University of Cincinnati. The long term goal of this project is to determine the most effective measures to detect and monitor deficits in postural control following concussion in children and adolescents.

Dr. Quatman-Yates second award is funded by the Ohio Physical Therapy Association and will test hypotheses regarding the impact of maturation on motor control abilities and specifically postural control abilities.

Significant Publications

Barber Foss, K. D., M. Hornsby, **N. M. Edwards**, **G. D. Myer** and **T. E. Hewett**. **Is body composition associated with an increased risk of developing anterior knee pain in adolescent female athletes?** *Phys Sportsmed*. 40(1): 13-19. 2012.

This publication is significant because it found that those adolescents with increased BMI were not at increased risk of developing knee pain through participating in athletics. Without this supposed increased risk, adolescent females with increased BMI should continue to participate in athletic activity to decrease the spiral of inactivity leading to increased obesity.

Faigenbaum, A. D., A. Farrell, M. Fabiano, T. Radler, F. Naclerio, N. A. Ratamess, J. Kang and **G. D. Myer**. **Effects of integrative neuromuscular training on fitness performance in children.** *Pediatr Exerc Sci*. 23(4): 573-584.

The significance of the current investigation is that integrative neuromuscular training instructed by qualified professionals can result in significant improvements in selected health- and skill-related fitness components in children, and provides a cost-effective and time efficient method for promoting physical activity in pediatric fitness programs. The salient findings from the present investigation indicate that ~15 min of integrative neuromuscular training performed twice weekly results in significantly greater gains in health and skill-related fitness measures than gains normally achieved with traditional physical education.

Paterno, M. V., M. J. Rauh, L. C. Schmitt, K. R. Ford and T. E. Hewett. Incidence of contralateral and ipsilateral anterior cruciate ligament (ACL) injury after primary ACL reconstruction and return to sport. *Clin J Sport Med.* 22(2): 116-121. 2012.

This landmark study was one of the first to report the incidence of a second anterior cruciate ligament (ACL) injury after undergoing an ACL reconstruction normalized to athletic exposure. The results suggest that young, active individuals who return to sports after undergoing an ACL reconstruction were 15 times more likely to suffer a second ACL injury than a healthy individual who has never suffered an initial ACL injury. Female athletes who returned to sports after ACL reconstruction were 4 times more likely to suffer a second ACL injury than males and 6 times more likely to suffer an injury on the opposite leg than the same side as the original ACL injury.

Quatman, C. E., A. Kiapour, G. D. Myer, K. R. Ford, C. K. Demetropoulos, V. K. Goel and T. E. Hewett. Cartilage pressure distributions provide a footprint to define female anterior cruciate ligament injury mechanisms. *Am J Sports Med.* 39(8): 1706-1713. 2011.

Clinical imaging studies of acute ACL injury demonstrate that hyperintense signals in the subchondral tibia and femur (bone bruises) occur in more than 80% of patients who sustain complete ACL disruption. This study is significant as it identifies a potential link between kinematic variables that may contribute to ACL injury mechanisms and resultant bone bruises following ACL injury. This determination of the mechanistic links in to injury will help guide injury mechanism driven interventions to prevent ACL injuries.

Quatman, C. E., C. C. Quatman-Yates, L. C. Schmitt and M. V. Paterno. The clinical utility and diagnostic performance of MRI for identification and classification of knee osteochondritis dissecans. *J Bone Joint Surg Am.* 94(11): 1036-1044. 2012.

This systematic review indicated that although MRI may be a relatively sensitive, specific, and accurate clinical tool for identifying osteochondritis dissecans (OCD) abnormalities, there is limited evidence available to provide strong conclusions regarding the utility of MRI to provide accurate classifications or grading of OCD lesions.

Division Publications

1. Barber Foss KD, Hornsby M, Edwards NM, Myer GD, Hewett TE. **Is body composition associated with an increased risk of developing anterior knee pain in adolescent female athletes?** *Phys Sportsmed.* 2012; 40:13-9.
2. Edwards NM, Daniels SR, Claytor RP, Khoury PR, Dolan LM, Kimball TR, Urbina EM. **Physical activity is independently associated with multiple measures of arterial stiffness in adolescents and young adults.** *Metabolism.* 2012; 61:869-72.
3. Faigenbaum AD, Farrell A, Fabiano M, Radler T, Naclerio F, Ratamess NA, Kang J, Myer GD. **Effects of integrative neuromuscular training on fitness performance in children.** *Pediatr Exerc Sci.* 2011; 23:573-84.
4. Faigenbaum AD, McFarland JE, Herman RE, Naclerio F, Ratamess NA, Kang J, Myer GD. **Reliability of the**

- one-repetition-maximum power clean test in adolescent athletes.** *J Strength Cond Res.* 2012; 26:432-7.
5. Faigenbaum AD, Straccolini A, Myer GD. **Exercise deficit disorder in youth: a hidden truth.** *Acta Paediatr.* 2011; 100:1423-5; discussion 1425.
 6. Ford KR, Minning SJ, Myer GD, Mangine RE, Colosimo AJ, Hewett TE. **Landing adaptations following isolated lateral meniscectomy in athletes.** *Knee Surg Sports Traumatol Arthrosc.* 2011; 19:1716-21.
 7. Ford KR, Myer GD, Schmitt LC, Uhl TL, Hewett TE. **Preferential quadriceps activation in female athletes with incremental increases in landing intensity.** *J Appl Biomech.* 2011; 27:215-22.
 8. Gokeler A, Benjaminse A, Hewett TE, Lephart SM, Engebretsen L, Ageberg E, Engelhardt M, Arnold MP, Postema K, Otten E, Dijkstra PU. **Proprioceptive deficits after ACL injury: are they clinically relevant?** *Br J Sports Med.* 2012; 46:180-92.
 9. Hewett TE, Myer GD. **The mechanistic connection between the trunk, hip, knee, and anterior cruciate ligament injury.** *Exerc Sport Sci Rev.* 2011; 39:161-6.
 10. Kahanov L, Kreiswirth EM, Myer GD, Eberman LE. **Anterior Superior Iliac Spine Ectopic Ossification in a High School Volleyball Player: A Case Review.** *Athletic Training & Sports Health Care.* 2012; 4(3):134-9.
 11. Kashikar-Zuck S, Myer GD, Ting TV. **Can behavioral treatments be enhanced by integrative neuromuscular training in the treatment of juvenile fibromyalgia?** *Pain Management.* 2012; 2(1):9-12.
 12. Klugman MF, Brent JL, Myer GD, Ford KR, Hewett TE. **Does an in-season only neuromuscular training protocol reduce deficits quantified by the tuck jump assessment?** *Clin Sports Med.* 2011; 30:825-40.
 13. Mendiguchia J, Ford KR, Quatman CE, Alentorn-Geli E, Hewett TE. **Sex differences in proximal control of the knee joint.** *Sports Med.* 2011; 41:541-57.
 14. Myer GD, Faigenbaum AD, Cherny CE, Heidt RS, Jr., Hewett TE. **Did the NFL Lockout expose the Achilles heel of competitive sports?** *J Orthop Sports Phys Ther.* 2011; 41:702-5.
 15. Paterno MV, Rauh MJ, Schmitt LC, Ford KR, Hewett TE. **Incidence of contralateral and ipsilateral anterior cruciate ligament (ACL) injury after primary ACL reconstruction and return to sport.** *Clin J Sport Med.* 2012; 22:116-21.
 16. Paterno MV, Schmitt LC, Ford KR, Rauh MJ, Myer GD, Hewett TE. **Effects of sex on compensatory landing strategies upon return to sport after anterior cruciate ligament reconstruction.** *J Orthop Sports Phys Ther.* 2011; 41:553-9.
 17. Paterno MV, Weed AM, Hewett TE. **A between sex comparison of anterior-posterior knee laxity after anterior cruciate ligament reconstruction with patellar tendon or hamstrings autograft: a systematic review.** *Sports Med.* 2012; 42:135-52.
 18. Quatman CE, Kiapour A, Myer GD, Ford KR, Demetropoulos CK, Goel VK, Hewett TE. **Cartilage pressure distributions provide a footprint to define female anterior cruciate ligament injury mechanisms.** *Am J Sports Med.* 2011; 39:1706-13.
 19. Quatman CE, Quatman-Yates CC, Schmitt LC, Paterno MV. **The clinical utility and diagnostic performance of MRI for identification and classification of knee osteochondritis dissecans.** *J Bone Joint Surg Am.* 2012; 94:1036-44.
 20. Wall EJ, Myer GD, May MM. **Anterior cruciate ligament reconstruction timing in children with open growth plates: new surgical techniques including all-epiphyseal.** *Clin Sports Med.* 2011; 30:789-800.

Faculty, Staff, and Trainees

Faculty Members

Teri McCambridge, MD, Associate Professor
Leadership Division Director

Research Interests Her research interests include injury prevention in gymnasts and runners and the role strength training has in youth athletics and injury prevention

Jon Divine, MD, Associate Professor

Nicholas Edwards, MD,MPH, Assistant Professor

Research Interests Physical activity promotion, obesity prevention and treatment, fitness monitoring, exercise counseling, infectious disease and the athlete.

Kevin Ford, PhD, Adjunct

Research Interests Sports injury prevention, biomechanical modeling techniques, lower extremity sports injuries

Timothy Hewett, PhD, Adjunct

Research Interests Prevention of knee injuries in the female athlete

Greg Myer, PhD, Assistant Professor

Leadership Director of Research

Research Interests Injury Biomechanics, Pediatric Exercise Science, Child Health

Michael Shaffer, DO, Assistant Professor

Leadership Fellowship Director

Research Interests Injury prevention, altered foot mechanics, manipulative treatment of spine and pelvis related dysfunction, treatment of female athlete's medical and physical issues related to sport

Joint Appointment Faculty Members

Mark Paterno, PhD,PT, MS, MBA, SCS, ATC, Assistant Professor (Occupational Therapy and Physical Therapy)

Research Interests Clinical Outcomes after Lower Extremity Injury, Rehabilitation Intervention Outcomes, Outcome after ACL Reconstruction

Clinical Staff Members

- **Corey Ellis, MD**

Trainees

- **Nate Bates, PhD Candidate**
- **Kate Berz, DO, PGY-VI**
- **Alysha Taxter, MD, PGY-VI**
- **Catherine Quatman-Yates, Post-Doctoral Fellow**
- **Dai Sugimoto, PhD Candidate**
- **Casey Reed, Medical Student**

Division Collaboration

Orthopaedics » Eric Wall, MD

Bone Bruise Study

Heart Institute » Jeff Robbins, PhD ; Jeffrey Anderson, MD, Richard Czosek, MD, Michelle Grenier, MD, Timothy Knilans, MD.

These long-term, ongoing studies involve Molecular Cardiovascular Biology and Sports Medicine examine the congenital basis for heart disease especially diseases that involve sudden death in the young. This collaboration will utilize a unique screening protocol to study sudden deaths in athletes.

Preventive Cardiology » Elaine Urbina, MD

This new five year study will measure the rate of cardiovascular aging in adolescents and young adults and determine which risk factors best predict accelerated aging.

Rheumatology » Susan Thompson, PhD

This collaborative effort between Sports Medicine and Rheumatology involved an examination of genetic risk factors for ACL tears and long-term knee osteoarthritis.

Physical Medicine and Rehabilitation; » Brian Hang, MD, Brad Kurowski, MD

This collaborative effort between Sports Medicine and PM&R is a prospective assessment of risk factors for and effects of sports related concussions.

Occupational Therapy/Physical Therapy » Becky Reder

This collaborative effort between Sports Medicine and OT/PT includes working on projects related to the effects of interventions on injury risk, concussion and foot/ankle research.

Comprehensive Children's Injury Center »

Development of multi-disciplinary head injury/concussion clinic, prevention program and treatment pathways.

Center for Better Health and Nutrition » Robert Siegel, MD

This project will evaluate advanced methods of physical activity assessment and feedback and their utility in children.

Behavioral Medicine and Clinical Psychology » Susmita M Kashikar-Zuck, PhD

The Divisions of Sports Medicine and Behavioral Therapy/Clinical Psychology have collaborated for a project entitled FIT (Fibromyalgia Integrative Training) Teens, during which adolescents with fibromyalgia patients are treated with our combined treatment protocol involving both Cognitive Behavioral Therapy and Integrative Neuromuscular Training to improve their coping abilities, improve their strength, mechanics, and postural control to overall enhance their ability to lead more active lifestyles.

Grants, Contracts, and Industry Agreements

Grant and Contract Awards	Annual Direct
EDWARDS, N	
Effects of Physical Activity on Cardiovascular Risk Factors in Youth National Institutes of Health(University of Cincinnati) KL2 RR 026315	04/01/11-03/31/13 \$73,188
FORD, K	
Sex Differences in ACL Injury Risk Factors Emerge During Adolescent Growth National Institutes of Health R03 AR 057551	07/12/10-06/30/12 \$52,541
MYER, G	
Neuromuscular Intervention Targeted to Mechanisms of ACL Load in Female Athletes National Institutes of Health R01 AR 055563	07/08/09-08/31/12 \$302,976
QUATMAN-YATES, C	
The Clinical Utility of the Balance Error Scoring System University of Cincinnati	01/01/12-12/31/12 \$5,000

The Impact of Adolescent Maturation on Postural Control

Ohio Physical Therapy Association

01/01/12-12/31/12

\$850

TAYLOR-HAAS,J

A Prospective Analysis of Outcome after Tibial Stress Fracture in Adolescent Long Distance Runners

Ohio Physical Therapy Association

01/01/12-12/31/12

\$1,000

Current Year Direct

\$435,555

Total

\$435,555