

Sports Medicine

Division Photo



First Row: T Hewett, K. Ford; Second Row: M. Shaffer, J. Divine, M. Paterno

Division Data Summary

Research and Training Details

Number of Faculty	4			
Number of Joint Appointment Faculty	2			
Number of Research Fellows	1			
Number of Research Students	5			
Number of Support Personnel	8			
Direct Annual Grant Support	\$1,472,225			
Peer Reviewed Publications	12			
Clinical Activities and Training				
Number of Clinical Staff	1			
Number of Clinical Fellows	2			
Number of Other Students	6			
Outpatient Encounters	4,600			

Significant Publications

Khan KM, New Video evidence links trunk and knee motion in non-contact ACL injury. Br J. Sports Med. 2009; 43:391

Karim Khan, the editor of the British Journal of Sports Medicine, had this to say about Dr. Hewett's new research findings. "Continuing the anterior cruciate ligament (ACL) theme-because who can get enough of that- Associate Editor Hewett provides another jewel in his crown of contributions that aim to make ACL history. Last month, he and newly-minted PhD Carmen Quatman reviewed the arguments for the valgus forces being the primary mechanism in women; this contrasts with the 'saggital plane' forces theory."

Myer GD, Ford KR, Paterno MV, Nick T, Hewett TE. The effects of Generalized Joint Laxity on Risk of Anterior Cruciate Ligament Injury in Young Female Athletes. Am J Sports Med. 2008 36(6): 1073-80

This study demonstrated an important link between increased generalized joint laxity in females and increased risk of ACL injury.

Division Highlights

Tim Hewett, PhD

ACL study group traveling scientist which took him to ISAKOS annual meeting in Osaka, Japan: Aristotle University of Thessaloniki in Greece: Speaker at the Japanese Clinical Sports Meeting in Tokyo Japan

Faculty Members

Jon Divine, MD, Associate Professor Clinical ; Division Chief; Medical Director

Timothy Hewett, PhD, Professor ; *Center Director; Research Director* Research Interests: Prevention of knee injuries in the female athlete

Kevin Ford, PhD, Assistant Professor

Michael Shaffer, DO, Assistant Professor Clinical

Joint Appointment Faculty Members

Mark Paterno, PT, MS, MBA, SCS, ATC, Field Service Assistant Professor Occupational Therapy and Physical Therapy

Eric Wall, MD, Associate Professor Clinical Orthopaedic Physicians and Staff

Clinical Staff Members

• Corey Ellis, MD

Trainees

- Lora Harrison, MD, PGY-VI,
- Adrick Harrison, PhD Candidate,
- Vimarie Rodriguez, MD, PGY-VI,
- Greg Myer, PhD Candidate,
- Mark Paterno, PhD Candidate,
- Carmen Quatman, MD Candidate,
- Sam Wordeman, PhD Candidate,

Significant Accomplishments

New Faculty and Awards

The Division of Sports Medicine promoted Kevin Ford, PhD to Assistant Professor. Dr. Ford earned his PhD from the University of Kentucky in exercise science and biomechanics where he won the Hackensmith Award, which is presented to the most outstanding graduate student.

Greg Myer, Senior Research Assistant, received the National Strength and Conditioning Association (NSCA) student research award in June.

The Division welcomed a couple new members to the team in fiscal year 2009.

- Michael Shaffer, DO joined Jon Divine, MD (Medical Director) and his staff in August of 2008. Dr. Shaffer was
 recruited from TexasTechUniversity where is served as an Assistant Professor and team physician for their athletic
 program.
- Carmen Quatman, PhD was hired as a research fellow during the summer of 2009. Dr. Quatman has worked as a student and research assistant within the Division for the past 7 years, participating in biomechanical data collection, reduction, and analysis at the Sports Medicine Biodynamics Center.
- Dr. Tim Hewett Awarded 3 grants for Sports Medicine Research

Dr. Tim Hewett, PhD, FACSM, Director of the Sports Medicine Biodynamics Center was awarded three grants in fiscal year 2009. Dr. Hewett and his team of researchers received a four year, \$2.5 million R01 award from the NIH titled "Neuromuscular Intervention Targeted to Mechanisms of ACL Load in Female Athletes". The major goal of this proposal

is to determine if decreased neuromuscular control of the trunk increases coronal plane knee load in high-risk groups of females. The rationale for this project is that its successful completion will provide a strong, evidence-based intervention that will effectively decrease ACL injury risk in high-risk female athletes.

Last fall, for the third consecutive year, the Division received an award from National Football League Charities. The award titled "Anterior Cruciate Ligament Reconstruction (ACLR): Clinical and Biomechanical Predictors of a Poor Outcome", seeks to determine the incidence of subsequent ACL injury following ACLR and identify modifiable factors predictive of a second ACL injury. Thus far, Mark Paterno PT, ATC, Laura Schmitt, PhD, PT and Dr. Hewett have successfully competed initial data collection on 65 subjects following anterior cruciate ligament reconstruction and return to sports (ACLR group) and 45 healthy control subjects. These subjects are currently being tracked for subsequent ACL injury and activity exposures during the 12 months following their testing.

The National Institutes of Health awarded Dr. Hewett his second R01 of fiscal year 2009 this past spring. "Multi-faceted Approach Modeling ACL Injury Mechanisms" is a four year \$2 million award that will develop, validate and optimize a computational knee model to study ACL injury mechanisms.

In addition to his grant accomplishments, Dr. Hewett also was named to the NIH Federal Advisory Committee on the Musculoskeletal Rehabilitation Sciences Study Section until the year 2015.

Sports Physical Therapy Program Boomed

Within the Division of Sports Medicine, Sports Physical Therapy has completed a productive year. In addition to a heavy clinical load, and the addition of several new staff, the clinician scientists continue to participate in several studies investigating rehabilitation outcomes. The main focus is centered on short and long term outcomes following Anterior Cruciate ligament reconstruction and return to sports. Other projects of note, include investigations into the utility of patient reported outcome measure in a pediatric and adolescent population as well as the efficacy of various end stage rehabilitation interventions in athletic populations. In addition, the physical therapists within the Sports Physical Therapy group have presented their findings at numerous regional and national meetings in the past year. The goal of this group is to continue to produce high quality physical therapy outcome research in an attempt to improve the interventions we implement with our patients and ultimately improve their long term outcome.

Division Publications

- 1. Boden BP, Torg JS, Knowles SB, Hewett TE. <u>Video analysis of anterior cruciate ligament injury: abnormalities in</u> <u>hip and ankle kinematics</u>. *Am J Sports Med.* 2009; 37: 252-9.
- 2. Myer GD, Ford KR, Barber Foss KD, Liu C, Nick TG, Hewett TE. <u>The relationship of hamstrings and guadriceps</u> <u>strength to anterior cruciate ligament injury in female athletes</u>. *Clin J Sport Med.* 2009; 19: 3-8.
- Myer GD, Ford KR, Divine JG, Wall EJ, Kahanov L, Hewett TE. <u>Longitudinal assessment of noncontact anterior</u> <u>cruciate ligament injury risk factors during maturation in a female athlete: a case report</u>. *J Athl Train.* 2009; 44: 101-9.
- Hewett TE, Torg JS, Boden BP. <u>Video analysis of trunk and knee motion during non-contact anterior cruciate ligament injury in female athletes: lateral trunk and knee abduction motion are combined components of the injury mechanism</u>. Br J Sports Med. 2009; 43: 417-22.
- Quatman CE, Hewett TE. <u>The anterior cruciate ligament injury controversy: is "valgus collapse" a sex-specific</u> <u>mechanism?</u>. Br J Sports Med. 2009; 43: 328-35.
- 6. Wall EJ, Vourazeris J, Myer GD, Emery KH, Divine JG, Nick TG, Hewett TE. <u>The healing potential of stable</u> <u>juvenile osteochondritis dissecans knee lesions</u>. *J Bone Joint Surg Am.* 2008; 90: 2655-64.
- 7. Ford KR, van den Bogert J, Myer GD, Shapiro R, Hewett TE. <u>The effects of age and skill level on knee</u> <u>musculature co-contraction during functional activities: a systematic review</u>. *Br J Sports Med.* 2008; 42: 561-6.
- 8. Myer GD, Brent JL, Ford KR, Hewett TE. <u>A pilot study to determine the effect of trunk and hip focused</u> <u>neuromuscular training on hip and knee isokinetic strength</u>. *Br J Sports Med.* 2008; 42: 614-9.
- 9. Myer GD, Chu DA, Brent JL, Hewett TE. <u>Trunk and hip control neuromuscular training for the prevention of knee joint injury</u>. *Clin Sports Med.* 2008; 27: 425-48, ix.
- 10. Quatman CE, Ford KR, Myer GD, Paterno MV, Hewett TE. <u>The effects of gender and pubertal status on</u> <u>generalized joint laxity in young athletes</u>. *J Sci Med Sport.* 2008; 11: 257-63.
- Renstrom P, Ljungqvist A, Arendt E, Beynnon B, Fukubayashi T, Garrett W, Georgoulis T, Hewett TE, Johnson R, Krosshaug T, Mandelbaum B, Micheli L, Myklebust G, Roos E, Roos H, Schamasch P, Shultz S, Werner S, Wojtys E, Engebretsen L. <u>Non-contact ACL injuries in female athletes: an International Olympic Committee current</u>

concepts statement. Br J Sports Med. 2008; 42: 394-412.

12. Hewett TE, Myer GD, Zazulak BT. <u>Hamstrings to guadriceps peak torque ratios diverge between sexes with</u> increasing isokinetic angular velocity. *J Sci Med Sport.* 2008; 11: 452-9.

Grants, Contracts, and Industry Agreements

Grant and Contract Awards		Annual Direct / Project Period Direct	
HEWETT, T			
Identifying Female Athletes at High National Institutes of Health	Risk for ACL Injury		
R01 AR 049735	09/21/04 - 08/31/09		\$298,560 / \$1,753,425
Cable and Gait in Persons with Stree American Heart Association - National	oke I (University of Cincinnati)		
0635006N	07/01/06 - 06/30/10		\$12,000 / \$12,000
Neuromuscular Intervention Targeton National Institutes of Health	ed to Mechanisms of ACL L	oad in Female Athletes	
R01 AR 055563	09/01/08 - 08/31/12		\$439,662 / \$1,702,438
Anterior Cruciate Ligament Recons NFL Charities	truction		
	01/01/09 - 12/31/09		\$124,837 / \$124,837
Multi-Faceted Approach to Modelin National Institutes of Health	g ACL Injury Mechanisms		
R01 AR 056259	05/15/09 - 04/30/13		\$547,520 / \$1,756,993
SCHMITT-HALUSZCZAK. L			
ACL Reconstruction in the Female National Institutes of Health	Athlete: Strength, Knee Med	chanisms and Outcome	
F32 AR 055844	03/01/08 - 02/28/11		\$49,646 / \$147,750
		Current Year Direct	1,472,225