

evolve

The Body Dynamics Quarterly Newsletter

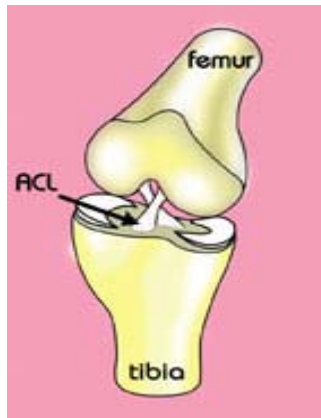
ACL Injuries and the Female Athlete

Why Women Are Five to Six Times More Likely To Injure Their ACL Than Men

Over the past decade, there has been an increase in the participation and level of play in women's sports. There has also been a parallel increase in sports-related injuries, particularly to the lower limbs. Aside from the typical strains and sprains, there has been an increase in ligamentous injuries to the knee. In fact, women are five to six times more likely to injure their anterior cruciate ligament (ACL) than men. Read on to find out why.

ANATOMY OF THE KNEE

The knee joint connects the femur (upper thigh bone) to the bones of the lower leg—the fibula and tibia. There are four major ligaments that secure this connection.



The medial collateral ligament (MCL) and the lateral collateral ligament (LCL) are found on either side of the knee joint. They support the knee from side-to-side.

The posterior cruciate ligament (PCL) and anterior cruciate ligament (ACL) lie deep within the knee joint. They support the knee from front-to-back and in rotational movement. The PCL is stronger than the ACL, however, and therefore less prone to injury.

ROLE OF THE ACL

The ACL stabilizes the knee in multiple ways. It prevents anterior translation

(forward movement) of the tibia and hyperextension of the knee. In addition, the ACL provides secondary stabilization for the knee from lateral forces, assisting the medial collateral ligament with stability from the side. The ACL also controls the rotation of the tibia on the femur when extending the knee, which is important in movements like side-stepping and pivoting.

ANTERIOR CRUCIATE LIGAMENT INJURIES

When the knee experiences a hard twist or excessive pressure on the ACL, tearing can occur. As a result, the knee “gives out” and can no longer support the body. Unless an injured ACL is accurately diagnosed and treated, the menisci (cushioning cartilage) in the knee can be seriously damaged. Without this cushion, the bones of the knee joint can rub against each other, leading to further damage.

continued on next page

BDI Director Jennifer Gamboa Interviewed on National Public Radio

BDI Director Jennifer Gamboa, DPT, OCS, was interviewed for a recent segment of National Public Radio's *Morning Edition*. She and Anthony Delitto, Chair, University of Pittsburgh Department of Physical Therapy, discussed the use of “prediction rules” to match characteristics of low back pain with specific interventions.

This approach, first developed by Delitto in 1995, recognizes that patients respond differently to treatments. For instance, those with pain for less than 15 days, no pain below the knee, and a stiff spine tend to benefit from

mobilization. Other patients with different characteristics of low back pain respond well to core-stabilization exercises.

Physical therapists who use this treatment-based classification for their low back pain patients are 65 percent more likely to have a successful outcome than those who do not.

Gamboa and the other physical therapists at Body Dynamics use this approach and have seen dramatic results in patients with chronic low back pain, particularly those who have not responded to other interventions.

In one case highlighted in the NPR segment, Gamboa was able to achieve a 50-percent reduction in disability within 3 weeks of starting physical therapy. The patient, who had not responded to 4 years of previous treatment for low back pain, is thrilled with her progress. “I came here only for an evaluation,” she said. “Now, I'm asking, How can this miracle be happening to me?”

This NPR radio segment aired March 9, 2006, and can be downloaded by visiting the BDI Web site at www.bodydynamicsinc.com. ■

From the Body Dynamics Director



Happy Spring to you all! I hope everyone is enjoying the warmer weather and the many blossoms of the season. There is nothing like a good dose of spring sunshine to lift everyone's spirits.

As you are planning your summer season, don't forget to register for your classes at BDI. We have a full complement of Pilates, Mindful Movement, and Gravity Training Classes, and we are working to expand our offerings in each of these fitness tracks.

You may have noticed last session that our classes are becoming increasingly full. So save your space (and

take advantage of our special "early bird" discount price) by registering in advance, and make sure you arrive a few minutes early for class.

Also this session, check out our workshops and free lectures, several of which are back by popular demand.

We are also happy to introduce our new ACL injury prevention workshop. If you are a 15- to 20-year-old woman playing sports (or the parent or coach of one), come to this MUST-HEAR workshop and learn how to prevent the number-one lower extremity injury in female athletes.

Enjoy your summer, and thank you for your continued support. All my best for a fun-filled spring and summer.

Jennifer M. Gamboa, DPT, OCS, MTC

Body Dynamics, Inc.

evolve is a quarterly newsletter of Body Dynamics, Inc.

Body Dynamics, Inc. (BDI) is a comprehensive center for orthopaedic and manual physical therapy and a leader in training elite athletes and performing artists. BDI's highly evolved programs address musculoskeletal needs through a multidisciplinary approach that integrates rehabilitation with Pilates-evolved fitness programs and massage therapy.

Director

Jennifer Gamboa, DPT, OCS, MTC

Body Dynamics, Inc.

5130 Wilson Boulevard
Arlington, VA 22205

www.bodydynamicsinc.com

703.527.9557 (phone)

703.526.0438 (fax)

info@bodydynamicsinc.com

Preventing Anterior Cruciate Ligament (ACL) Injuries

continued from previous page

Injuries to the ACL can occur in contact and non-contact activities. Contact injury is not as common and tends to result from a tackle from behind. Non-contact injury accounts for up to 70 percent of ACL injuries. Ruptures of this kind typically occur with traumatic force to the knee in a twisting motion. This often happens during dynamic movement, such as landing a jump, cutting, or changing directions, often along with deceleration.

WOMEN AT RISK

As stated earlier, women are at greater risk than men for ACL injuries. At particularly high risk are women 15- to 20-years-old who participate in soccer or basketball. This is due to the movements required of these sports.

A study conducted in the 1990s found that 31 percent of female collegiate soccer players had an ACL injury, compared to only 13 percent of males. And a recent study presented by the American Academy of Pediatrics indicated that female high school varsity athletes had a higher rate of lower extremity injuries than their male counterparts. While the statistics vary, one thing is clear: ACL tears are more common in women, making prevention and education even more important.

Among the theories for why ACL tears occur more often in women are the following:

1. Changes in estrogen levels during the menstrual cycle may affect ACL strength and predispose women to injury.

2. Women tend not to bend their knees as much as men when landing a jump, increasing the pressure on the knee.

3. Women also tend to turn and pivot in a more erect position, rather than crouching by bending deeply at the knees and hips. The more upright stance strains the ACL.

4. Many female athletes favor quadriceps over hamstrings when changing direction rapidly. If the hamstrings are not strong enough, there can be enough force on the lower leg to tear the ACL.

Clearly, muscle balance in the lower extremities and proper biomechanics are both critical, especially among female athletes. And the good news: Both factors can be influenced substantially through training and education. (See the article on page 3 for more information on ACL injury prevention training programs.)

To learn more about ACL injury prevention in female athletes, including guidance in specific exercises to enhance strength and agility, register for Body Dynamics' ACL workshop. (See page 3 for details.)

For a thorough assessment of your strengths and weaknesses and to receive a tailored exercise program that targets individual deficiencies, female and male athletes alike are encouraged to sign up for an individual fitness assessment and one-on-one training sessions with Body Dynamics' certified movement specialists. ■

Saving Your ACL

Preventing ACL Injuries Through Training and Education

Through appropriate strengthening and awareness training, you can change how a joint functions with specific activities. Several research studies have shown dramatic reductions specifically in the incidence of ACL injuries to the knee—ranging from a 60- to 89-percent decrease in such injuries.

ACL injury prevention training programs vary from off-season workout regimens to pre-practice warmup drills that are performed for the entire season. Such programs typically include regular stretching, strengthening, plyometric (explosive strengthening), and agility training. Another component of most ACL injury prevention programs is education and training on appropriate knee position with cutting, running, and jumping activities.

One particular in-season program—the Prevent Injury and Enhance Performance or “PEP” program—spanned 2 years and examined 3,814 female athletes. The athletes were placed into one of two groups: (1) Those performing the PEP exercises or (2) a control group that did not perform the PEP exercises.

The exercise intervention included the following components:

WARMUP: 2 MIN

Warmup exercises included a slow jog, shuttle (side to side) running to engage inner and outer thighs, and backward running to engage hamstrings and gluteals.

STRETCHING: 5 MIN

Stretching exercises targeted the legs and hips and included stretches for calves, quadriceps, hamstrings, adductors (inner

thighs), and hip flexors (which lie deep in the pelvis and low spine). Each stretch was held for 30 seconds and performed twice.

STRENGTH TRAINING: 2 MIN

Strengthening exercises included walking lunges to strengthen quadriceps and exercises for hamstrings and calves.

PLYOMETRICS: 3 MIN

Explosive exercises, which build power, strength, and speed, included hopping over cones (side-to-side, forward-and-backward, and with a single leg), jumping straight up, and “scissor” jumping.

AGILITY TRAINING: 3 MIN

Agility exercises included a variety of drills to teach proper technique and train dynamic stability of the ankle, knee, and hip joint. Examples include running patterns that require quick pivoting, quick shifts from forward- to backward-running, and “bounding” runs to train hip flexion.

The results of the PEP study were striking. In the first year of the study, there was an 88-percent reduction in ACL injuries among those performing the PEP exercises. In the second year, the PEP approach reduced the number of injuries by 74 percent. ■



Stretching, strengthening, plyometrics, and agility training can help prevent ACL injuries in female athletes.

Gravity™ Training System (GTS): More Good News!

The scientific reviews are in, and the reports are good. Gravity is still anchoring us to the earth, and the Gravity™ Training System (GTS) is still an excellent total-body workout for strength, length, and cardio.

The GTS fitness track at BDI continues to thrive. We currently have 22 class offerings, and as you requested, we are looking to add more.

Learn Something New!

Keep your mind sharp and your body healthy this summer by attending one (or more!) of BDI's most popular workshops and lectures.

6.24 Running Workshop

Learn how to improve your running technique, get the most out of your footwear, establish and progress your training program, and manage a variety of common running injuries. 2-4 pm, \$60 per person.

7.15 Living With Chronic Pain

This lecture will include information to help you understand the physiological adaptations of pain and develop physical and mental coping mechanisms. There will be plenty of opportunity for discussion. 2-3:30 pm, FREE!

7.22 ACL Injuries in Female Athletes

Learn why women are at increased risk for ACL injuries and what injury prevention techniques have proven most successful. Coaches, athletes, and parents are encouraged to attend. 2-4 pm, \$60 per person.

8.5 Partner Massage Workshop

Grab a friend and join us for a hands-on workshop that will teach you simple massage techniques to alleviate headaches, neck and shoulder tension, and hand and foot discomfort. 2-4 pm, \$75 per couple.

8.19 About Back Pain

Learn how to protect your back by using correct posture at your desk, good technique when lifting heavy objects, and appropriate positioning when sleeping. 2-3:30 pm, FREE!

See the front desk for further information or to register. ■

Body Dynamics, Inc. Services and Fees

Summer 2006

PILATES

Initial evaluation	\$100
55-minute private session	\$80
10-pack of private Pilates sessions	\$720

PHYSICAL THERAPY

Fees available upon request

ACUPUNCTURE

90-minute initial evaluation	\$140
60-minute followup sessions	\$90

MASSAGE

30-minute massage	\$50
60-minute massage	\$90
10-pack of 60-minute massages	\$810

GRAVITY TRAINING (GTS)

Custom GTS class (up to 7 people)	\$150
-----------------------------------	-------

FITNESS AND SPORTS ASSESSMENTS

90-min golf assessment and video	\$140
90-min running assessment and video	\$140
60-min cardiovascular fitness assessment	\$70
60-min dancer's health profile	\$100

GROUP CLASSES

Early bird registration	\$182
Regular registration	\$195
Drop-in rate	\$16
Flash pass (unlimited classes excluding GTS)	\$487.50
GTS pass (three 30-min workouts/wk)	\$507
Combo pass (2 Pilates & 2 GTS classes/wk)	\$650

Other Happenings

- ▶ BDI Pilates instructors [Sonia Cronmiller](#) and [Cheryl Eavey](#) attended the annual Polestar-Pilates international conference in April. Held in Key Biscayne, Florida, the conference combined movement classes, research forums, and roundtable discussions to stimulate advances in Pilates practice. Topics explored in the conference included women's health, Pilates in dance conditioning, and Pilates and geriatrics.
- ▶ [Gwynn Hegyi](#) joins the GTS teaching staff at Body Dynamics this summer. An avid exerciser and long-time BDI client, Gwynn recently completed BDI's inhouse GTS training program and will begin teaching Wednesdays and Saturdays. Welcome Gwynn!
- ▶ Congratulations to BDI physical therapists [Jason Gradeo](#), [Amy Humphrey](#), [Carrie James](#), and [Ashley Templer](#), who took their Orthopedic Clinical Specialist (OCS) examination in the spring. Granted by the American Board of Physical Therapy Specialties, the certification involves an 8-hour exam and extensive documentation. The process is quite selective. Physical therapists must meet certain criteria before they even apply to sit for the test. Currently, there are only about 2,500 certified orthopedic physical therapists in the United States.
- ▶ Congratulations to [Ashley Templer](#) and her husband Trent who welcomed into the world a 7-pound, 13 ounce baby girl, Ella Kathryn Templer, on March 21!

Summer '06 Events

- 5.16 Early Bird Registration Deadline
- 5.30 Summer Classes Begin
- 6.24 Running Workshop 2-4 pm
- 7.15 Lecture: Living With Chronic Pain 2-3:30 pm
- 7.22 ACL Injuries in Female Athletes 2-3:30 pm
- 8.5 Partner Massage Workshop 2-4 pm
- 8.19 Lecture: About Back Pain 2-3:30 pm
- 8.26 Summer Classes End

WANTED:

A Few Good Men...and Women!

BDI is always looking for good people. If you or someone you know is looking for an opportunity within Office Administration, Personal Training, or Group Class Instruction, please contact Stephanie at 703.527.9557.

Body Dynamics, Inc.
5130 Wilson Blvd
Arlington, VA 22205

www.bodydynamicsinc.com