

# Exercising During Pregnancy

BY KATHRYN GLOYER, M.D.



Many women want to know if it is safe for them to either start an exercise program or continue exercising in pregnancy. They want advice on how much and what activities are recommended. Since the 1980s, there have been advances in research that have helped guide our recommendations and changed society's acceptance of physical activity in pregnancy.

Many changes take place in a woman's body during pregnancy. Weight gain creates increased force across the joints and increased joint laxity secondary to hormonal effects. Her center of gravity shifts and lumbar lordosis increases which puts the expectant mom at risk for balance problems and low back pain, respectively. Both blood volume and heart rate increase in early pregnancy to provide increased oxygen and nutrient supply for the growing fetus. These changes cause symptoms of fatigue, nausea, and dizziness. Increased metabolic rate and heat production also increase her risk for heat illness.

There are clear maternal benefits of continued regular exercise throughout pregnancy. Women who exercise can decrease the symptoms

of early pregnancy, prevent excess maternal weight gain, give birth to leaner babies, and reduce the risk of premature labor and gestational diabetes. Other benefits during labor include a decrease in need for pain relief, induction, episiotomy, and operative delivery.

When prescribing exercise for the pregnant woman, one must evaluate her general medical condition, orthopaedic and musculoskeletal history, medication use and risk for coronary heart disease. Pregnancy induced hypertension, abnormal vaginal bleeding, preterm labor, utero-placental insufficiency, premature rupture of membranes, and incompetent cervix are considered absolute contraindications to exercise in pregnancy. Fortunately, the majority of women are healthy enough for exercise.

Twenty to forty minutes of regular, sustained, weight-bearing exercise (running, aerobics, cross-country skiing) three to five times-a-week is recommended. Strength training is also acceptable during pregnancy. Rating perceived exertion is used to monitor exercise intensity rather than heart rate. Additional abdominal and breast support may be needed while exercising. Generally, exercising at altitude, SCUBA diving, contact sports, and sports with a high risk of falling are **not** recommended.

Exercising women should monitor nutrition and hydration status, weight gain, and motivation for a healthy pregnancy. Competitive athletes need more intense monitoring than beginning or recreational exercisers. Advise your patient to stop exercising and consult her doctor if she experiences any pain, discomfort, vaginal bleeding, fatigue, or signs of labor.

Exercising in pregnancy has clear benefits for both the mother and baby. Preparing for exercise in pregnancy should begin months prior to conception. Remind women that exercise during pregnancy should be flexible and fun!

## PRIMARY CARE SPORTS MEDICINE

### Matthew Silvis, M.D.

msilvis@hmc.psu.edu  
Associate Professor, Departments of Family and Community Medicine and Orthopaedics  
Medical Director, Primary Care Sports Medicine  
Penn State Hershey Medical Group—Palmyra, 717-838-6305  
Penn State Hershey Bone and Joint Institute, 717-531-5638

### Kathryn Gloyer, M.D.

kgloyer@hmc.psu.edu  
Assistant Professor, Departments of Family and Community Medicine and Orthopaedics  
Penn State Hershey Medical Group—Middletown, 717-948-5180  
Penn State Hershey Bone and Joint Institute, 717-531-5638

### George Pujalte, M.D.

gpujalte@hmc.psu.edu  
Assistant Professor, Department of Family and Community Medicine and Orthopaedics  
Penn State Hershey Medical Group—Fishburn Road, 717-531-8181  
Penn State Hershey Bone and Joint Institute, 717-531-5638

### Andrew Wren, D.O.

awren@hmc.psu.edu  
Associate Professor, Department of Family and Community Medicine  
Medical Director, Penn State Hershey Medical Group—  
Elizabethtown, 717-361-0666

## ORTHOPAEDIC SPORTS MEDICINE

### Kevin Black, M.D.

kblack@hmc.psu.edu  
Professor and C. McCollister Everts Chair  
Penn State Hershey Orthopaedics  
Penn State Hershey Bone and Joint Institute, 717- 531-5638

### Robert Gallo, M.D.

rgallo@hmc.psu.edu  
Assistant Professor, Penn State Hershey Orthopaedics  
Penn State Hershey Bone and Joint Institute, 717-531-5638

### Scott Lynch, M.D.

slynch@hmc.psu.edu  
Associate Professor, Director of Sports Medicine Service  
Practice Site Clinical Director of Adult Bone and Joint Institute  
Associate Director of Orthopaedic Residency Education, 717-531-5638  
Penn State Hershey Bone and Joint Institute, 717-531-5638

## SPORTS MEDICINE PHYSICAL THERAPY

### Robert Kelly, PT, ATC

Physical Therapist, Certified Athletic Trainer  
Team Physical Therapist, Hershey Bears Hockey Club

### Paul Brower, MSPT, ATC

Physical Therapist, Certified Athletic Trainer

### Scott Deihl, ATC, PTA

Physical Therapist Assistant, Certified Athletic Trainer

### Tanya Deihl, ATC, PTA

Physical Therapist Assistant, Certified Athletic Trainer,  
Athletic Trainer, Annville Cleona High School

### John Wawrzyniak, MA, ATC, PT, CSCS

Physical Therapist, Certified Athletic Trainer  
Strength & Conditioning Specialist, Hershey Bears Hockey Club

# Sports Medicine

FOR THE PRIMARY CARE PROVIDER

## Returning to Exercise Following DVT Treatment

BY MATTHEW SILVIS, M.D.

*A 25-year-old female runner was diagnosed with a right lower extremity deep venous thrombosis (DVT) after starting oral contraceptives for dysfunctional uterine bleeding. She is heterozygous for factor V Leiden. She has been prescribed Coumadin and is now therapeutic after one week of anticoagulation (INR = 2.2). Lovenox has been discontinued. She would very much like to resume running. When is it safe to do so?*

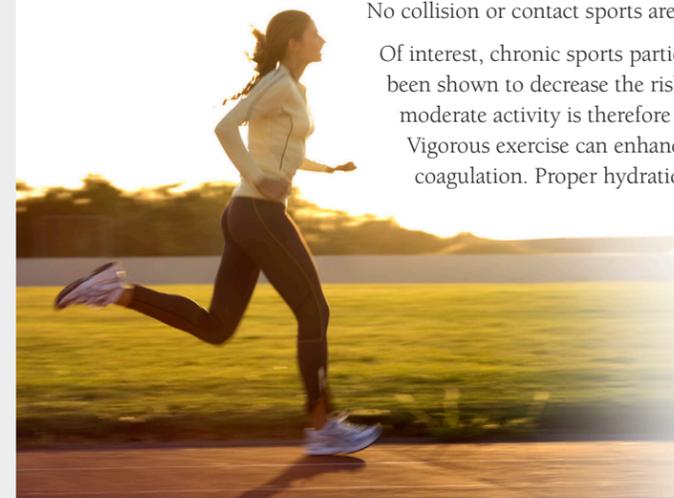
The majority of athletes can begin ambulating within twenty-four hours after initiating anticoagulation, as long as there is no evidence of pulmonary embolus and there is adequate cardiopulmonary reserve. Evidence has shown that there is no increased risk of acute exacerbation of DVT symptoms or pulmonary embolism in those who ambulate early. In fact, early walking has been shown to reduce the risk of DVT extension, improve resolution of DVT symptoms, and reduce long-term symptoms of post-thrombotic syndrome.

Animal models have demonstrated endothelialization and adhesion to the vessel wall within three weeks of an acute DVT. During weeks four through six, lysis and recanalization occur.

While there are no randomized controlled trials or expert consensus statements in regard to return to play (RTP) after diagnosis and treatment of DVT, a gradual RTP is recommended. During weeks one to three, activities of daily living are permitted. Non-weight-bearing exercise (swimming) can begin during week four followed by non-impact loading exercise (cycling) in week five. Impact-loading exercise (running) can begin in week six. No collision or contact sports are permitted while anticoagulated.

Of interest, chronic sports participation or endurance training has been shown to decrease the risk of venous thrombosis. Light to moderate activity is therefore considered to be of benefit.

Vigorous exercise can enhance platelet reactivity and coagulation. Proper hydration is critical for all athletes, especially those with history of DVT or those athletes who regularly engage in intense physical activities.



### Dear Health Care Provider,

My name is Matthew Silvis, and I am the Medical Director of Primary Care Sports Medicine at Penn State Hershey. This is the summer edition of our Primary Care Sports Medicine Newsletter, a biannual newsletter of seasonal sports topics. We hope you find the information useful and we would appreciate any feedback you can provide to enhance our efforts. We have selected a variety of topics for this issue. Our guest writer is Dr. Pamela Brian, M.D., assistant professor, Penn State Hershey Radiology.

If you'd like to receive this newsletter by email, please contact my administrative assistant, Jeanne Laicha at [jlaicha@hmc.psu.edu](mailto:jlaicha@hmc.psu.edu). Interested in submitting an idea for a future article? Please send topic ideas to Jeanne or myself at [msilvis@hmc.psu.edu](mailto:msilvis@hmc.psu.edu).

Sincerely,

Matthew Silvis, M.D.

ASSOCIATE PROFESSOR  
PENN STATE HERSEY FAMILY AND COMMUNITY MEDICINE &  
PENN STATE HERSEY ORTHOPAEDICS AND REHABILITATION  
PENN STATE MILTON S. HERSEY MEDICAL CENTER

PENNSTATE HERSEY  
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Medical Center

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# Femoroacetabular Impingement

BY PAMELA BRIAN, M.D. | ASSISTANT PROFESSOR OF RADIOLOGY | GUEST CONTRIBUTOR

A relatively new topic in orthopaedics, sports medicine and radiology is Femoroacetabular Impingement (FAI). This is important for practitioners to recognize because early diagnosis and treatment are geared to prevent the secondary osteoarthritis that may result from hip impingement.

Femoroacetabular impingement describes a clinical condition in which hip pain is elicited when there is abnormal contact between the femoral neck and the acetabulum at the

extremes of hip range-of-motion. Anatomic variations of the acetabulum and/or the proximal femur are thought to lead to FAI. Two types of FAI (pincer and cam type) have been described, although most commonly patients demonstrate a combination of the two types. In the pincer type of FAI, the acetabulum may be too prominent. In the cam type of FAI the femoral neck may have an abnormal shape. These anatomic variations can lead to acetabular labral tears, femoral head or acetabular cartilage injury, and hip pain in some patients.

The typical patient with FAI is usually athletic, 30 to 40 years of age, and complains of groin pain and limited hip range of motion. Physical examination should include the impingement test, a provocative maneuver that attempts to reproduce the patient's symptoms. Most commonly, pain is reproduced when the leg is brought into hip flexion, internal rotation and adduction. Some patients, however, may have pain with external rotation and extension of the hip (posterior impingement).

High quality radiographs of the pelvis and affected hip should be the initial imaging study. The radiographic findings of pincer type impingement include focal or diffuse overcoverage of the femoral head by a

prominent acetabulum. The findings of cam type impingement are represented by a prominent osseous bump at the femoral head-neck junction. Further radiologic evaluation can be obtained with an MRI of the pelvis. MRI performed with interarticular injection of contrast material into the involved hip (magnetic resonance arthrogram) can increase the accuracy of the study. The MRI or MR arthrogram should be tailored to evaluate the hip for the findings and sequelae of femoroacetabular impingement. In addition, the MRI can evaluate the remainder of the hip and pelvis to exclude other possible causes of hip pain.

Referral to an orthopaedic surgeon with interest and experience in FAI is recommended when the history, physical examination, and radiologic studies meet the criteria for this diagnosis. Early diagnosis is critical as surgery can be performed and thus early onset arthritis can possibly be avoided. Studies have shown that corrective or preventive procedures are not successful once arthritis has already developed.

The treatment of FAI includes removal of excessive bone from the acetabulum and/or femoral neck and debridement of acetabular labral tears and cartilage abnormalities.



AP Pelvis Radiograph demonstrating a prominent acetabulum that overcovers the femoral head (pincer type FAI)

# Allergic Rhinitis in Athletes

BY GEORGE PUJALTE, M.D.

*An elite runner comes into your clinic stating that he has been sneezing more often since moving to Hershey. He states he has not been breathing or sleeping well. He wonders if he has "allergies," and if his symptoms will affect his running time.*

Allergic rhinitis is one of the most common clinical manifestations of allergic disorders in athletes. Long-distance runners, track and field athletes, cyclists, and swimmers are particularly affected. They may present with nasal congestion, sneezing, rhinorrhea, postnasal dripping, coughing, "itchy" ears, eyes, nose and throat, and photophobia.

Signs and symptoms in athletes can be subtle, and may include poor sleep quality and fatigue. Nasal obstruction in allergic rhinitis may lead to mouth breathing, which is disadvantageous because allergens and other pollutants are not filtered, and air warming and humidification is reduced. This leads to cooling of the airways and hyperreactivity. Rhinitis can change sleep patterns because of nasal obstruction, rhinorrhea and sinus pressure. Resultant tiredness and fatigue may impair performance. Reaction time, attention, and vigilance were decreased during cognitive processing studies in athletes with allergic rhinitis.

Diagnosis and treatment of rhinitis in elite athletes requires careful planning. If the medication being considered is on the World Anti-Doping Agency (WADA) banned list, this could have serious implications. The Allergy Questionnaire for Athletes (AQUA) may be helpful in diagnosis. Skin IgE testing should be considered in the assessment of the elite athlete. Asthma and rhinitis often coexist, and increased bronchial hyperreactivity during challenge tests may be noted.

The management of choice for athletes are intranasal corticosteroids, which are not prohibited and do not require Therapeutic Use Exemption (TUE) nor Declaration of Use. Second-generation antihistamines may be used. Allergen avoidance should be part of the management, unless impractical. Antihistamine, corticosteroid or mast cell stabiliser eye drops may help. Nasal saline irrigation may reduce allergen contact with the nasal mucosa. External nasal dilator strips may help increase the nasal diameter. Allergen immunotherapy has not been studied in athletes, but is effective in non-athletes. Systemic corticosteroids and pseudoephedrine are prohibited and require TUE.

# Injury prevention for the seasoned athlete:

## THE IMPORTANCE OF AN EFFECTIVE WARM-UP

BY ROBERT KELLY, P.T., A.T.C.

One of life's challenges: as we age, we know the importance of regular exercise, and we may still feel young. Therefore, we want to continue with strenuous sports and exercise, but our bodies start to rebel.

Our bodies go through many changes as we get older. Our bones become less dense, our joints begin to wear out, we lose muscle mass and strength, and our tissues become less flexible. These changes make us more susceptible to injury, derailing our plans to stay active in the sports we love or exercises we need to do to stay healthy.

Aging is inevitable. We exercise to delay or reverse some of the effects of aging. It becomes increasingly important as we get older to take steps to reduce the chance of injury while striving to stay active.

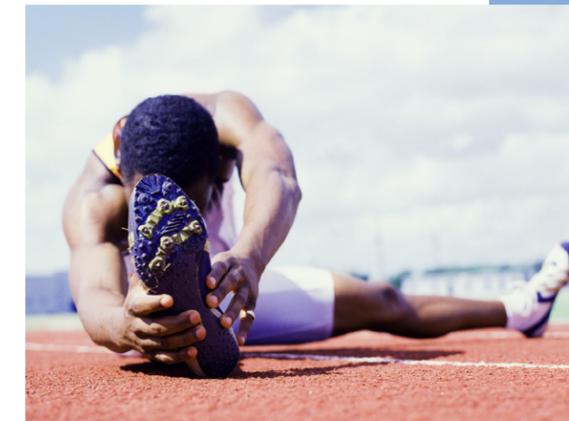
It is important to prepare our bodies for the rigors of sport and exercise with a proper warm-up. An adequate warm-up increases tissue and body temperature prior to strenuous

exercise. This will stimulate the nervous system, make tissue longer and more elastic, and elevate the body's core temperature.

Historically, warm-up has consisted of static stretching prior to activity. Static stretching consists of holding a relaxed muscle in a lengthened position for an extended time. This can be time consuming, and research shows it may do little to prevent injury.

A time-efficient, effective strategy to prepare our bodies for strenuous exercise is to participate in a dynamic stretching program. The goal of dynamic stretching is to warm up the body and to loosen stiff muscles and tendons by repeatedly taking joints through their complete ranges of motion. This will reduce tissue stiffness and warm tissue so they are more capable of handling high forces during strenuous exercise. Also, contrary to static stretching, dynamic stretching doesn't result in decreased muscle strength, which can affect sport performance.

An effective dynamic stretching warm-up only takes five to ten minutes. It should involve all major joints including hips, knees, ankles, shoulders, and the trunk. Exercises should include motions specific to the sport you are engaging in. Work the entire body and take your joints through a full range of motion in multiple planes of movement.



# Management of the "Middle-Aged" Athlete with Knee Arthritis

BY KEVIN BLACK, M.D. | C. MCCOLLISTER EVARTS CHAIR OF PENN STATE HERSHEY ORTHOPAEDICS

As medical advances continue and the importance of a healthy lifestyle is emphasized to an increasing degree, more and more recreationally active, "middle-aged" patients present to our offices with complaints of knee pain. For purposes of this discussion, and recognizing that physiological and chronological ages are not always perfectly matched, middle age is meant to refer to men and women between the ages of forty and sixty-five. This review outlines an algorithmic type approach to management of these knee symptoms and lifestyle.

The first priority: make as accurate a diagnosis as possible. This may seem easier than it often is, as many individuals present with varying combinations of meniscus pathology and arthritis. A careful history and physical exam, and utilization of standing radiographs, can usually lead to the correct diagnosis. It is important to appreciate that MRI can be very helpful in understanding the etiology of the patient's pain, but one must also appreciate its limitations. Several studies have demonstrated that many asymptomatic adults will have meniscus tears on MRI. The advanced MRI imaging available today can, however, be very helpful in the identification of significant articular cartilage degeneration that might not be appreciated on even standing plain radiographs.

Initial treatment recommendations, in order of priority, include weight loss (if appropriate), activity modification, limited use of over-the-counter and prescription nonsteroidal anti-inflammatory medications, and cortisone or viscosupplementation injections. A recent investigation done within our Department of Orthopaedic and Rehabilitation has demonstrated that isolated weight loss, in the absence of any other arthritis treatment, results in significant improvement in arthritis symptoms and improvement in function. Careful questioning often reveals that specific activities (example: squats, lunges, high impact) are significant pain generators. Elimination of them will frequently result in meaningful reduction in discomfort. Most patients will tolerate an exercise bike or elliptical machine quite well, and should be counseled to exercise regularly within the limits of their discomfort.

The ultimate goals are to allow individuals to maintain an active and healthy lifestyle for as long as possible without the need for surgical intervention. The above recommendations can achieve that quite well for many patients.