

ACTIVE P.T. SOLUTIONS
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APTS Monthly



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Monday -

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Thursday -

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8:00am - 4:00pm

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The Three Rotator Cuffs of the Body

Most of the general population is familiar with the rotator cuff of the shoulder and its importance to shoulder function and stability. What most people do not realize is that there are actually three rotator cuffs in the body. The first is the aforementioned rotator cuff of the shoulder made up of four primary muscles. The second is the rotator cuff of the hip made up of eight primary muscles. The third rotator cuff is that of the spine made up of three primary muscles. All three of the rotator cuffs serve to stabilize the respective region and body part while larger muscles move the joint. These "rotator cuff" muscles are the foundation of the body's stability system.

The rotator cuff of the shoulder tends to get a great deal of press primarily through sports news outlets such as ESPN. When a famous professional athlete has an injury to the shoulder's rotator cuff, it is reported in a nanosecond and millions of people are informed instantaneously how that injury will affect their favorite team or – worse yet – their fantasy team. The four rotator cuff muscles of the shoulder include the supraspinatus muscle, which is the topmost muscle and helps with lifting the arm to the side of the body. The infraspinatus and teres minor muscles rotate the shoulder out to the side, and finally the subscapularis muscle rotates the shoulder inward towards the belly. The most commonly torn rotator cuff tendon of the shoulder is the supraspinatus. Over the age of 60, the frequency of subscapularis tendon tears increase.

While the shoulder and hip are both ball-and-socket joints, the shoulder joint is quite shallow and subsequently has more mobility, but it also

relies on the rotator cuff more for its stability. The hip, on the other hand, has a deeper socket and therefore does not need to rely on its muscles as much for its stability. Because of this deep-seated structure, the hip is also limited in its mobility.



The rotator cuff of the hip is made up of 6 external rotators: piriformis, superior gemellus, obturator internus, inferior gemellus, obturator externus, and quadratus femoris. There are also two main muscles that lift the leg to the side of the body: the gluteus minimus and the gluteus medius. These two muscles are analogous to the supraspinatus in the shoulder. The strength of these muscles is important not only in athletics but also in daily life. The rotator cuff of the hip provides stability when we walk since, at any given moment when we walk, we are standing on one foot. When these muscles are strong, they also help prevent falls, improve balance, and prevent fractures of the hip. They are also important for basic movements such as lifting the foot to put on socks or tie a shoelace.

While the spine is not a ball-and-socket joint like the shoulder and hip joints, it still has the ability to "rotate". Rotation in the spine is much more complicated than the hip or the shoulder joint. Since the architecture of the bones is not round and is multi-segmental, each segment only moves a few degrees. However, when we add up the motion for each segment, it

allows us to do things like touch our toes. All of this mobility must be balanced with dynamic stability provided by the "rotator cuff" muscles of the spine. There are three primary muscles that traverse the length of the spine in some form. The multifidus, semispinalis, and rotatore muscles are in pairs at each segment of the spine. The larger muscles of the core (abdominal obliques, transverse abdominus, quadratus lumborum, etc.) actually perform the movement of the spine. The rotator cuff muscles are contracting underneath the larger muscles acting as guide wires to control and direct the motion. The rotator cuff of the spine has the largest influence over our basic movement patterns. For example, when you reach for your cup of coffee in the morning, your brain is telling the spinal rotator cuff that it has to contract prior to moving the arm in the direction of the cup. This segmental contraction provides a stable foundation from which the arm can work. When someone experiences sudden back pain picking up something trivial such as a pen or pillow, it is usually because the spinal rotator cuff did not contract until the motion had already begun.

It is an important injury prevention strategy to strengthen all three rotator cuffs of the body. The spinal rotator cuff first, then the shoulder rotator cuff, and finally the rotator cuff of the hip. In the end, we need a healthy balance of strength, stability, and flexibility to maintain the overall health of the body's joints and adjacent structures.

Article by Dale Buchberger,

Exercise of the Month: Prone Bilateral BBI



Prone Bilateral BBI start and end position (top), exercise position (bottom)

This exercise will strengthen your shoulders and shoulder blades. It will also help to improve your posture and prevent further injury from poor posture. BBI stands for Blackburn I, and I is the position of the hands (there are 4 positions of this exercise, and this is the most common one).

To get in position, lie face down on the floor (this is the “prone” position) with your forehead resting on a 4-inch towel to clear the floor and align your head with your spine. Do not lie with your neck turned to one side. Place your arms at your side with your

palms facing up.

To perform the exercise, there are essentially 4 moves. First, squeeze your shoulder blades together (down and back towards your waist, not up towards your ears) and lift your arms up to the height of your hips, not higher. Hold your arms in the air for 1-3 seconds, then relax arms down to the floor, and relax shoulder blades last.

Perform one set of 10 repetitions 1-2 times per day as tolerated without pain. A 5/10 or greater pain scale during or after exercise means you pushed it too far and

you should back down on the repetitions next time.

Gradually increase your repetitions to 30 over a period of time. When this becomes easy for you, drop your reps back down to 10 and hold a one-pound weight in each hand. Then repeat the cycle of working up to 30 reps, dropping back down to 10 reps and increasing weight by one-pound increments. Three or four pounds at 30 reps would be the maximum weight for this exercise.

As always, contact your healthcare provider if you experience more pain with this—or any—exercise!

What’s Going on at APTS?

Tom Zirilli, PT, completed a course through Colorado State University on Basic Occupational Ergonomics, thus earning himself an ergonomic certification. He learned about common ergonomic injuries, how to assess them, and how to prevent and treat them, giving us a better knowledge base for our on-site treatment locations.

Dr. Buchberger returned from the USA Triathlon medical staff for the MultiSport World Championship Festival in Odense, Denmark. He was in Odense, Denmark, from July 3-July 9. Having worked previously with USA Swimming (California), USA

Bobsled (Germany), and multiple Summer World University Games (South Korea & Taiwan), he now adds Triathlon to his international experiences!

Both Dale Buchberger and Tom Zirilli are certified in Personalized Blood Flow Restricted (PBFR) rehabilitation, which is the brief and intermittent occlusion of venous blood flow using a tourniquet while exercising. Using this technique, you can exercise with significantly lighter weights while still creating a growth and strength response in the muscle. This is typically used after injury or surgery when a patient is unable to lift a heavy load.

Active PT Solutions is also once again sponsoring the Downtown Auburn Mile on Friday, August 24. This one-mile race is for competitive and recreational runners and walkers and their families. It begins at 7:00 PM that night in front of Pettigrass Funeral Home on Genesee Street and loops around Downtown Auburn, ending at Prison City Pub and Brewery on the corner of State and Dill Streets. The Auburn B.I.D. is sponsoring Music on the Mall featuring Mere Mortals that night after the race. Sign up online only until 9:00 P.M. on August 23rd at www.lightboxreg.com/downtown-auburn-mile_2018 for \$12 in advance. Register the day of the race for \$20.

APTS Night at the Doubledays

Active PT Solutions sponsored its 5th Annual Doubledays Community Night on Thursday, July 19. We handed out vouchers for free tickets to the game that night, which started at 6:30 PM against the Mahoning Valley Scrappers. We had a booth with ponchos and koozies to give away at the game with lots of little helpers, the children of APTS! Dale threw out the first pitch, a curve ball, without warming up, so he was quite

proud of himself! The attendance that night was 1895. Thank you

for all of those who attended! We look forward to it every year!



the **Y** **DOWNTOWN AUBURN MILE**
Friday, August 24
Race begins 7:00 pm

ONE MILE ROUTE!!!
After Race Awards & Festivities at Finish Line
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Thoracic Outlet Syndrome



Numbness and tingling are perhaps some of the most common symptoms people will

experience in the hand. In most cases, the first thought related to numbness and tingling in the hand is that it must be carpal tunnel syndrome (CTS). Thoracic outlet syndrome or TOS is another condition that affects the arm and hand by producing numbness and tingling. Fortunately symptoms of these conditions follow a road map of sorts making it easier to distinguish one from the other. For example, the most common symptom pattern for carpal tunnel syndrome is to have numbness and tingling in the palm side of the first three fingers of the hand. Thoracic outlet syndrome, however, will present with numbness and tingling in either the ring finger and pinky or the entire hand depending on the subtype of thoracic outlet syndrome that is present.

There are three different types of thoracic outlet syndrome: neurogenic, vascular, and secondary. Neurogenic TOS involves compression of the main bundle of nerves that exits the neck and travels into the arm. The compression usually occurs as the nerves course between the scalene muscles in the front of the neck or as the nerves travel under the collarbone. Vascular TOS can take two forms: arterial or venous. Compression of either the subclavian artery or subclavian vein under the collarbone can happen if the area is narrowed or can occur secondary to repetitive movements of the shoulder and arm (such as throwing). Secondary TOS occurs when the shoulder joint becomes unstable. Since the shoulder joint is a ball and

socket joint, the ball part of the joint fails to stay centered in the socket during movement and puts chronic traction on the nerves, arteries, and veins passing by it. Over time this instability will begin to cause symptoms similar to TOS.

Symptoms of thoracic outlet syndrome vary based on the type and location of the compression. The most common type of thoracic outlet syndrome occurring in 95% of cases is referred to as neurogenic thoracic outlet syndrome. Neurogenic TOS usually presents with pain, grip strength weakness, numbness and tingling in the hand and arm, as well as neck and upper back pain. Arterial TOS presents with coldness, numbness, tingling, pain, and white discoloration in the fourth and fifth digits or the entire hand. Cramping of the forearm and hand during activity is common. This is known as claudication. Patients usually experience pain traveling down the arm and into the hand, but symptoms are generally absent from the neck and shoulder. Venous TOS presents much differently than arterial or neurogenic TOS in that there is a clear visual sign. The patient's arm and hand will swell and display a blue discoloration and will have a feeling of fullness or aching in the arm. In overhand athletes such as baseball players it will be most pronounced during throwing activities.

Secondary TOS occurs when the ligaments of the shoulder (glenohumeral) joint are too loose to maintain stability and the joint becomes unstable during movement. If the shoulder joint slips forward it will traction the neurovascular sleeve (a bundle of a nerve, artery, and vein) as it passes in front of the shoulder. When this happens repeatedly as in throwing or lifting, the patient will begin to experience TOS symptoms such as numbness, tingling, and weakness in the arm and

hand, especially with the activity that brought on the symptoms in the first place.

Neurogenic and Secondary TOS are best treated with conservative physical therapy and/or chiropractic treatments. When a patient has been diagnosed with neurogenic TOS, the initial goal is to reduce the nerve compression between the neck and the shoulder. Soft tissue techniques such as Active Release Techniques (ART) are very effective at reducing nerve compression. Posture should be addressed with manual therapies to the neck and upper back. Patients should be instructed on specific exercises to improve strength and endurance in their postural muscles. If the patient is diagnosed with secondary TOS, the focus of treatment is slightly different in that the shoulder joint instability must be corrected with a comprehensive rotator cuff and postural strengthening program. Improving posture and strengthening the rotator cuff will prevent the shoulder joint from slipping forward and tractioning the neurovascular sleeve.

If you are displaying symptoms consistent with arterial or venous TOS you should see a vascular or orthopedic surgeon. Venous TOS may be initially treated with a variety of medications aimed at reducing clot formation. Decompressive surgery may be necessary if pharmaceutical treatment does not resolve the symptoms. Arterial TOS will require a surgical solution. If an extra rib (known as a cervical rib) is present, it may need to be removed. Then the aneurysm will need to be repaired. Keep in mind that carpal tunnel syndrome is not the only condition that causes numbness and tingling in the hands.

Article by Dale Buchberger,
DC, PT, CSCS

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APTS Recipe Box: Watermelon Salad with Roasted Almonds & Fig Balsamic Dressing

This salad is gluten-free, dairy-free, and paleo and it is perfect for a hot summer day—and very easy to throw together!

Ingredients

For the salad: 4 cups salad greens; 2 cups sliced watermelon, rind & seeds removed; 2 tsp green onion, sliced; 1/2 cup cherry tomatoes, halved; 2 tablespoons jicama, thinly sliced; 3-4 figs, quartered; 1/4 cup almonds, toasted; 2 Persian/cocktail cucumbers, diced

For the dressing: 2 tbsp olive oil; 2 tsp fig balsamic vinegar; a few pinches of pepper and salt

Instructions

1. Preheat oven to 350 degrees.
2. Spread almonds onto a baking sheet & toast for 5-8 minutes.
3. Set aside to cool while you prepare the dressing.
4. Add dressing ingredients to a container with a lid & shake to combine.
5. Place salad greens into a large bowl & toss with the dressing.
6. Divide greens between 2 plates.
7. Roughly chop toasted almonds & chop up the other salad components.
8. Top salad with the remaining ingredients and enjoy!

Source: <http://www.paleopaparazzi.com/2016/08/easy-paleo-watermelon-salad-with-roasted-almonds-fig-balsamic-dressing/>



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Get Well...Get Active...Be Active

Newsletter Edited by Carolyn B. Collier, PTA

At Active Physical Therapy Solutions,
we utilize the most cutting edge
treatment and management
techniques available. Our goal is to
deliver the best possible healthcare in
a friendly, caring, and well-organized
environment. Our staff is here to
provide active solutions to achieving
your personal goals!

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Nutrition 101: Dehydration Headaches

How does a dehydration headache develop? Dehydration reduces your blood volume, which in turn affects the amount of oxygen-rich blood flowing to the brain. This results in pain.

What causes these dehydration headaches can be as simple as not having consumed enough fluids. About 60% of your body consists of water, so staying well hydrated is vital for many bodily functions. If you don't drink enough water, your heart, kidneys, digestive system, and cognitive function can suffer.

You're at risk for dehydration if you've exercised vigorously without replacing fluids lost by sweat, you have a medical condition that might cause frequent urination (e.g. diabetes), you take medications that might increase urination (e.g. diuretics like hydrochlorothiazide used to treat high blood pressure), you deliberately cut back on your fluid intake because excessive urination caused by medications means you are having to get up several times at night to go to the bathroom, you have been vomiting due to a foodborne illness such as salmonella, or you have diarrhea which limits the amount of water absorbed from food via your digestive tract.

Your dehydration headache can best be prevented by ensuring that you don't become dehydrated. But how can you tell if you are? It's likely that you'll notice other symptoms as well as your headache. Some common signs that might flag the underlying causes for your dehydration headache include:

- **Thirst.** This typically sets in if your body loses 1-2% of its water content (e.g. due to perspiration during vigorous exercise). However, if you're older, you may not feel thirsty



even when you are. Dehydration is also a big risk in older people suffering from dementia conditions such as Alzheimer's disease.

- **Fatigue.** This occurs because having insufficient fluids in your body causes a drop in your blood volume, meaning your heart has to work harder to pump blood through your circulatory system.
- **Dry skin.** This is often used by doctors to assess dehydration. Hydrated skin typically snaps down again immediately if pinched. Pinching the skin on the back of your hand is a simple way to check whether your body has enough fluids.
- **Muscle cramps.** These can occur if the nerves that feed your muscles are surrounded by too little water.
- **Infrequent urination or urinating in smaller amounts.** If you're urinating less than usual, you likely aren't drinking enough.
- **Dark-colored urine.** This is a sign that urine is more concentrated than normal due to

dehydration. Urine should ideally be a pale straw color.

- **Dizziness.** This occurs because of reduced blood volume due to too little fluid in your body.
- **Cognitive changes.** Studies suggest that dehydration can affect your attention, memory, reasoning abilities, and reaction times, as well as cause irritability.

Painkillers such as acetaminophen or ibuprofen can help ease a dehydration headache. But the best way to prevent one is to ensure you drink enough fluids. The Institute of Medicine recommends that women take in about 91 ounces of fluids per day and that men take in about 125 ounces. It doesn't just have to be water—you can factor in any other fluids, as well as fluids contained in foods, such as soup, fruits (watermelon, apples, grapefruits), and vegetables (lettuce, broccoli).

Fluid requirements rise in hot weather, if you're engaging in physical activity, and if you're experiencing diarrhea due to illness.

If you think you have dehydration symptoms from exercising, take a break and rest until you've had time to rehydrate, and if you're dehydrated due to vomiting and diarrhea, consider replenishing your electrolyte levels. Electrolytes include sodium, potassium, and magnesium, which are present in blood, body tissues, and body fluids. A proper balance is essential for such bodily processes as heart function.

Article by Carolyn Collier, PTA

Source: <https://universityhealthnews.com/daily/pain/dehydration-headache/>