Why Focus on Chronic Pain?

- **Background**
  - Chronic pain is ongoing or recurrent pain, lasting beyond the usual course of acute illness or injury, or more than 3-6 months (Ratter, 2014). Chronic pain adversely affects an individual’s well-being. Chronic pain can also contribute to disability, anxiety, depression; sleep disturbances, poor quality of life, and high healthcare costs (Cochrane, 2014).
  - Chronic pain persists and is often a self-limiting problem. Pain signals fire continuously in the nervous system for weeks, months, and even years. Chronic pain can be due to an initial injury or, an ongoing cause of pain such as arthritis, cancer, or infection. However, some people suffer from chronic pain in the absence of any past injury or evidence of body damage. Common chronic pain complaints can include headache, low back pain, cancer pain, arthritis pain, neurogenic pain, and/or psychogenic pain (American Chronic Pain Association).

- **Prevalence and Cost**
  - The total incremental cost of health care due to chronic pain is estimated at $261-$300 billion annually. The value of lost productivity is based on three estimates: days of work missed ($11.6-$12.7 billion), hours of work lost ($95.2-$96.5 billion), and lower wages ($190.6-$226.3 billion). According to the National Institute of Health in 2011, the total financial cost of pain to society, which combines the health care cost estimates and the three productivity estimates, range from $560-$635 billion annually.

- **Population**
  - Chronic pain is defined as persistent pain that extends beyond normal tissue healing time greater than three to six months (Ratter, 2014). Patients with persistent pain can have reduced or complete disability in normal daily activities including self-care activities, household chores, cooking, grocery shopping, driving, and sexual dysfunction (Ratter, 2014). Patients included in this clinical practice guideline are any patients with persistent pain including but not limited to the musculoskeletal, neuromuscular, inflammatory, or visceral/genitourinary tract systems. Common diagnoses seen in patients with persistent pain include fibromyalgia, complex regional pain syndrome, migraines, headaches, peripheral pain including osteoarthritis, rheumatoid arthritis and the vast array of spine pain disorders including cervical, thoracic and lumbar spine pain (Nijs, 2015).
• Risk Factors
  o Can include, but are not limited to the following:
    ▪ Previous history of pain
    ▪ Psychological distress
    ▪ Dissatisfaction with work
    ▪ Lack of exercise
    ▪ Overuse/Heavy lifting
    ▪ Smoking
    ▪ Increased Age
    ▪ Persistent post-surgical pain
    ▪ Persistent post trauma pain
    ▪ Frequency of seeing medical providers

• Diagnosis/Classification
  o **Neuropathic Pain**- pain caused by damage or disease affecting the somatosensory nervous system. Neuropathic pain may be associated with abnormal sensations called dysesthesia or pain from normally non-painful stimuli (allodynia). It may have continuous and/or episodic components.
    ▪ Peripheral- nerve pain that is a symptom of damage or dysfunction of the peripheral nervous system, which is the vast network of nerves that send messages to and from the central nervous system. Examples include complex regional pain syndrome, metabolic disorders, and phantom limb.
    ▪ Central- nerve pain or symptoms which are neurological and caused by a dysfunction that specifically affects the central nervous system, which includes the brain, brainstem and spinal cord. Examples include Parkinson's disease, multiple sclerosis, post-stroke pain, fibromyalgia, and myelopathies.

  o **Musculoskeletal Pain**- pain that can affect bones, muscles, ligaments, tendons, and nerves. Musculoskeletal pain can be localized in one area, or widespread. Pain can be caused from injury, overuse, poor posture, and/or prolonged immobilization. Examples can include low back pain, myalgia, Myofascial Pain Syndrome, stress fractures, and tendonitis.

  o **Inflammatory Pain**- localized reaction that produces redness, warmth, swelling, and pain as a result of infection, irritation, or injury. Inflammation can be external or internal. Examples can include arthropathies, infection, post-operative pain, and tissue injuries.
Outcome Measures

- **Suggested Outcome Measures to Utilize:**
  - PROMIS (http://www.healthmeasures.net/administrator/components/com_instruments/uploads/PROMIS%20SF%20v2.0%20-%20Physical%20Function%208b%2011-29-2016.pdf)
  - Fear Avoidance Beliefs Questionnaire (FABQ) (http://www.clinicalprediction.com/wp-content/uploads/2015/06/FABQ.pdf)
  - The Brief Pain Inventory (http://prc.coh.org/pdf/BPI%20Short%20Version.pdf)
  - The Pain Catastrophizing Scale
  - Oswestry Disability Questionnaire (http://www.propt.net/files/pdf/Outcome%20Measures/Revised%20Oswestry.pdf)
  - 2 Minute Walk Test
  - 6 Minute Walk Test
  - 5x Sit to Stand

- Fear is a distressing negative experience induced by a perceived threat. The most commonly used outcome measure for fear is the **Fear Avoidance Beliefs Questionnaire (FABQ)**. The FABQ is designed to quantify fear and avoidance beliefs in individuals with chronic pain. The FABQ has two subscales to measure fear-avoidance beliefs about work and physical activity. The higher the score represents an increase in fear-avoidance beliefs. (Burton, W et al., 1999) (Fritz, et al. 2002)
  - Chronic pain is one of the most common disabling and persistent pain diagnoses (Baird, Sheffield, 2016). Beliefs about one’s pain and ability to cope with pain determine physical and mental health outcomes in patients with chronic pain (Baird, Sheffield, 2016). **The Brief Pain Inventory** has been found to be responsive to detecting and reflecting improvement in pain over time for chronic nonmalignant pain. The Brief Pain Inventory maintains consistency and validity of measuring pain intensity and pain interference within chronic pain patients. The measure is also considerably sensitive to detecting and measuring changes in pain, such as demonstrating improvement (Tan, 2004).
  - **The Pain Catastrophizing Scale** is multi-dimensional and considers rumination, magnification, and helplessness as important components of catastrophizing. The Pain Catastrophizing Scale is a robust tool that has clinical and non-clinical applications and seems to generalize across populations and cultures (Van Damme, 2002). The Pain Catastrophizing Scale is a useful measure for predicting pain intensity (Sullivan, 1995).
  - Based on completion rates, distances walked, reliability and the high correlation between the distance walked in 2 and 6 minutes, the distance walked over 2 minutes can be considered to be a legitimate alternative to the distance walked over 6 minutes for indicating functional endurance among relatively healthy community-dwelling individuals. Even if the **6 minute walk test** is used, it may be useful to document **2 minute walk test** distance so that useful information is still obtained from individuals unable to complete the full 6MWT (Bohannon, R, et al, 2014).
• **Chronic Pain Program Interventions**
  
  o **Interdisciplinary Chronic Pain Program** uses the integration of physical rehabilitation, psychosocial, and medical interventions combined to create the most cost-effective and clinically-effective long term care (Gatchel, 2014). A systematic review found intensive (>100) hours of multidisciplinary biopsychosocial rehabilitation with functional restoration resulted in greater pain reduction and function for patients with chronic, disabling low back pain (Guzman, 2001). Self-management interventions to reduce pain limitations and improve physical activity have strong evidence for treatment of chronic musculoskeletal pain conditions (Smith, 2016). Interventions should be focused on disrupting the vicious cycle of fear avoidance behavior, pain, and disability (Bunzil, et al., 2017).

  o **Pain Neuroscience Education** is used to treat patients with pain by changing cognitions, beliefs, and fear before engaging a movement based approach of therapeutic exercise, graded exposure and pacing, guided motor imagery, cognitive behavioral therapy, acceptance and commitment therapies (Louw, Diehere, et al., 2011). The goal is to decrease fear and catastrophization. Pain neuroscience education is an educational intervention which aims to reduce pain and disability by explaining the biology of the pain experience to a patient (Moseley, 2005. Ryan, G et al., 2010).
    
    ▪ **Delivery Methods**
      - Verbal instruction (1:1 is most effective)
      - Duration & Frequency: 10-15 minutes; 1-2x/week; 1x/week when interspersed with homework
      - Group Sessions can be performed but should not exceed 12 patients, patients need to be like-minded and can be seen 1x/week for 6-8 week.

  o **Graded Motor Imagery** (GMI) is an intervention that may be effective for patients with persistent pain by treating their cortical disruption (Bowering, 2013). The goal of GMI is to target cortical disruption and normalize sensory stimulation without triggering the pain response (Bowering, 2013). GMI increases cortical and spinal motor excitability. Visual input enhances tactile sensitivity. There is currently limited evidence to support GMI and mirror therapy for treatment of chronic pain; however, early research does support improvement in pain compared to traditional physical therapy interventions (Bowering, 2012). Evidence demonstrates an increased analgesic benefit for individuals with Complex Regional Pain Syndrome presenting with symptoms for 1 year or less (McCabe, 2008).
    
    ▪ **Delivery Methods**
      - GMI should be organized starting with left-right discrimination, motor imagery, and then mirror therapy.
      - Duration & Frequency: Daily practice for optimal results; duration should be increased per patient tolerance (may only tolerate 1-2 minutes at first to not experience increased pain) (Moseley, G, et al., 2012)
Exercise is a common treatment for patients with persistent musculoskeletal pain aimed at reducing the central nervous system sensitivity to movement with graded exposure (Nijs, 2015). It is recommended that an exercise program be dosed and progressively loaded based on the individual's own physical and psychological capabilities (Smith, 2016). Exercise therapy is found to be more effective with an individually designed stretching and strengthening program (Hayden, 2005). A systematic review and meta-analysis found significant improvement in pain and function up until 12 months but no long-term (>12 months) significant difference when patients exercised regardless of pain (Smith, 2016). Another exercise progression discussed the role of cognitive preparation before participating in therapeutic exercise (Nijs, 2015). One randomly controlled trial found significant short-term pain reduction in favor of McKenzie exercise techniques compared to regular lumbar stabilization for treatment of subacute and chronic low back pain, but no long-term differences were found (Peterson, 2002). Exercise can reduce pain and improve function (van Middelkoop, 2010).

Cognitive behavioral therapy (CBT) is the prevailing psychological treatment for individuals with chronic pain (Edhe, 2014). CBT focuses on the development of personal coping strategies that target solving current problems and changing unhelpful patterns in cognitions (e.g. thoughts, beliefs, and attitudes), behaviors, and emotional regulation. Depression and physical disability are found to be directly linked to self-efficacy beliefs (Asghari, 2008). CBT focuses on reducing maladaptive behaviors, improving thoughts and beliefs, and increasing self-efficacy for pain management (Turner and Romano, 2001). CBT is effective in reducing pain and distress, and reducing disability in systematic and meta-analysis reviews (Edhe, 2014). Multiple trials have shown that CBT is more effective for pain, functional status, and behavioral outcomes than placebo or no treatment (Airaksinen, 2006).

Acceptance and Commitment Therapy (ACT) is a type of behavior therapy that is used to treat chronic pain and conditions that often go along with pain, such as anxiety, depression, and substance use problems. ACT is an evidence-based treatment for chronic pain. ACT does not aim to reduce pain intensity, but rather increase pain acceptance and reduce avoidance due to pain (Veehof, 2011). ACT is a promising alternative to CBT, particularly in older populations. Mindfulness training can be a particularly useful tool in restructuring patients’ avoidance cognitions, so that they can return to activities of value despite pain (Okifuji, 2015). The literature is limited, but there is an indication that cognitive reconstruction and acceptance allow for a greater pain tolerance, both in acute and chronic pain settings. Acceptance seems to be effective in both settings (Kohl, 2014).

Aquatic Therapy is an advantageous intervention for patients with chronic pain due to its anti-gravity effects to minimize compressive forces and promote muscle strengthening, aerobic exercise, increase blood circulation, reduce pain and improve quality of life (Lim, 2010). A randomized controlled trial found after an eight week program, three times per week for 40 minutes consisting of aerobic exercise and lower extremity strengthening exercises resulted in greater body mass reduction, reduced pain and improved compliance and consistency (Lim, 2010). Benefits have been found to reduce pain, improve mood, increase quality of life and increase aerobic capacity when treating patients with fibromyalgia (Assis, 2006). Patients with chronic low back pain have improved disability and increased quality of life compared to land-based therapy (Dundar, 2009), and a meta-analysis found moderate effect in reducing pain, improving quality of life and physical function (Barker, 2014).

- Duration & Frequency: 3x/week for 8 weeks of 40 minute sessions for greater body mass reduction, reduced pain and improved compliance and consistency (Lim, 2010)
Pilates is a low impact program that focuses on core strength, stability, and proper breathing mechanics. Goal is to increase circulation, decrease muscular tension, and improve postural awareness allowing for improvement in pain and decreasing amount of stress placed on the body. A systematic review found short term, significant benefits compared to normal physical activity and similar results to other therapies for treating patients with chronic low back pain (Wells, 2014).

Tai Chi has been shown to be beneficial for the treatment of chronic pain (Hall, 2011). Tai Chi is a blanket term that has many variations that have different intensities, and an understanding of the type of Tai Chi being performed is needed to appropriately place a chronic pain patient in the correct group. Research shows that slow motion and weight shifting can improve musculoskeletal strength and stability which therein are effective in decreasing associated pain and restrictions. Significant positive results for treatment in chronic pain were found for low back pain, osteoporosis, and osteoarthritis (Kong, 2016) (Lee, 2009).

Yoga has been shown by several studies to offer significantly better pain reduction than usual care, education, or conventional exercises (Posadzki, 2011). Combines postural awareness, breathing techniques, and meditation or relaxation to significantly better pain reduction. Positive effect sizes of yoga on all pain-related disorders as measured by pain intensity/frequency and pain-associated disability. Yoga also demonstrates a positive effect with diminished anxiety, greater improvements in functional disability, and depression (Dunleavy, 2016).

Algorithm Appendix **

- **Patient History**
  - Description of current pain, including time of onset
  - Systemic diseases check (osteoporosis, cancer, arthritis, infection, etc.)
  - Neurological symptoms
  - Bowel/bladder symptoms
  - Biological and psychosocial risk factors

- **(B) Physical Examination**
  - Motor weakness and reflex changes
  - Sensory deficits
  - Range of motion
  - Pain patterns, including location and description
  - Functional mobility assessment

- **(C) Red Flags**
  - Suspected cauda equine syndrome
  - Myelopathy/upper motor neuron changes
  - Suspected cancer
  - Suspected infection
  - Recent undiagnosed trauma
• (D) Yellow Flags
  o Fear-avoidance behavior
  o Low mood/withdrawal
  o Expectation of passive treatment
  o Negative pain beliefs
  o Family concerns
  o Job issues
  o Persistent pain
  o Different explanations
  o Failed Treatment

• (E) Inclusion/Exclusion Criteria
  o Inclusion
    ▪ Chronic nonmalignant pain >6 months
    ▪ Reasonably high functioning, roughly average intelligence, able to keep up with group
    ▪ Comorbid functional impairment and/or mood difficulties
    ▪ Motivated for treatment
    ▪ Willing to do group based treatment, generally gets along with others
  o Exclusion
    ▪ Active (uncontrolled) substance use (except tobacco)
    ▪ Severe mental illness requiring higher level of care
    ▪ Unmotivated or unwilling to change
    ▪ Any other factors you think might interfere with group process

• (F) Referral Considerations
  o Multidisciplinary Team Approach
  o Initiate and encourage regular exercise and conditioning program (PT/OT)
  o Psychosocial evaluation (psychology referral)
  o Patient education and pain management plan (multidisciplinary)
  o Medication management (PM&R)

• (G) 8 Week Group Therapy Program- refer to Chronic Pain Rehabilitation Program flyer

• (H) Treatment Guidelines- refer to Table H

• (I) Community resources- refer to Table I
Flyer G:

Chronic Pain Rehabilitation Program

Description: The Comprehensive Pain Rehabilitation Program (CPRP) is an 8-week program for adults living with chronic pain conditions. This program teaches healthy lifestyle and specialized skills for living a full life with pain. The focus is on learning to pursue personal values and meaningful life goals in spite of physical and emotional pain. CPRP uses an interdisciplinary team approach and includes staff from psychology, physical therapy, nutrition, pharmacy, and medicine.

Schedule: Tuesday, 1:00 to 4:30 PM
- Group education & behavior therapy (1:00-3:00 PM)
- Group physical therapy (3:15-4:30 PM)

Check-in: Outpatient Care East Family Practice Center
- 543 Taylor Avenue (2nd floor), Columbus, OH 43203 On the first and last days of the program, please check in by 12:30 pm to complete paperwork.

Attendance Policy: If you miss more than 2 appointments, you may be asked to participate at a later date. If for whatever reason you are unable to attend, please contact Dr. Laurie Greco at (614) 366-8358.

Treatment Format:
- Eight (8) group sessions led by a clinical-health psychologist, physical therapist, and other members of the treatment team, including: resident physician, clinical pharmacist, registered dietitian, and social worker
- Individual counseling, nutrition and pharmacy consultation, and case management services are available as-needed

For more information about the OSU Family Medicine Chronic Pain Rehabilitation Program, please speak with your provider or contact Dr. Laurie Greco at (614) 366-8358
### Chronic Pain Rehabilitation Program

<table>
<thead>
<tr>
<th>Week</th>
<th>Education &amp; ACT Topics</th>
<th>STAFF</th>
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</thead>
<tbody>
<tr>
<td>Week 1</td>
<td><strong>Education</strong>: Bio-psycho-social model of pain, active vs. passive treatment, hurt vs. harm&lt;br&gt;<strong>ACT</strong>: Nature of human suffering, Mindfulness</td>
<td>Clinical Health Psychologist&lt;br&gt;Resident Physician</td>
</tr>
<tr>
<td>Week 2</td>
<td><strong>Education</strong>: Spine health, posture, body mechanics&lt;br&gt;<strong>ACT</strong>: Let’s get clear about what’s NOT working; Control as the problem, <em>not</em> the solution</td>
<td>Physical Therapist&lt;br&gt;Clinical Health Psychologist&lt;br&gt;Resident Physician</td>
</tr>
<tr>
<td>Week 3</td>
<td><strong>Education</strong>: Healthy sleep habits&lt;br&gt;<strong>ACT</strong>: Let’s get clear about what’s NOT working; Control as the problem, <em>not</em> the solution</td>
<td>Social Worker&lt;br&gt;Clinical Health Psychologist&lt;br&gt;Resident Physician</td>
</tr>
<tr>
<td>Week 4</td>
<td><strong>Education</strong>: Activity management, pacing skills, and SELF-managing flare-ups&lt;br&gt;<strong>ACT</strong>: Methods for cultivating willingness</td>
<td>Physical Therapist&lt;br&gt;Clinical Health Psychologist&lt;br&gt;Resident Physician</td>
</tr>
<tr>
<td>Week 5</td>
<td><strong>Education</strong>: Pain medications&lt;br&gt;<strong>ACT</strong>: Methods for cultivating willingness</td>
<td>Pharmacist&lt;br&gt;Clinical Health Psychologist&lt;br&gt;Resident Physician</td>
</tr>
<tr>
<td>Week 6</td>
<td><strong>Education</strong>: Mindfulness, nutrition &amp; wellness&lt;br&gt;<strong>ACT</strong>: Methods for cultivating willingness</td>
<td>Dietitian&lt;br&gt;Clinical Health Psychologist&lt;br&gt;Resident Physician</td>
</tr>
<tr>
<td>Week 7</td>
<td><strong>ACT</strong>: Values identification &amp; clarification; Willingness in the service of values</td>
<td>Clinical Health Psychologist&lt;br&gt;Resident Physician</td>
</tr>
<tr>
<td>Week 8</td>
<td><strong>ACT</strong>: Barriers to living out values&lt;br&gt;Making &amp; keeping commitments&lt;br&gt;Follow up / booster session(s)</td>
<td>Clinical Health Psychologist&lt;br&gt;Resident Physician</td>
</tr>
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</table>
Group Education / Acceptance & Commitment Therapy (ACT)

Acceptance and Commitment Therapy ("ACT") is the treatment approach used in the CPRP program. ACT is a type of behavior therapy or “talk therapy” that is used to treat chronic pain and conditions that often go along with pain, such as anxiety, depression, and substance use problems. ACT is considered an evidence-based treatment for chronic pain. Research has shown that ACT is an effective approach for people living with chronic pain and related conditions. For more ACT, please visit the website: www.contextualscience.org.
<table>
<thead>
<tr>
<th>Type of Pain</th>
<th>Evaluation</th>
<th>Treatment Recommendations</th>
</tr>
</thead>
</table>
| **Peripheral Neuropathic Pain** (ex. Complex Regional Pain Syndrome, Metabolic disorders, Phantom limb) | • Symptoms: abnormal sensations or pain from normally non-painful stimuli, swelling, change in skin temperature and skin color, joint stiffness, muscle spasms  
• Exam: weakness, decrease in functional mobility/ROM, decrease in sensation  
• Imaging: X-ray, MRI, bone scan | • Physical therapy including appropriate exercise, aquatic therapy, GMI, desensitization, CBT, ACT, TENS, biofeedback, pain neuroscience education  
• Interdisciplinary Chronic Pain Program |
| **Central Neuropathic Pain** (ex. Fibromyalgia, Parkinson’s Disease, Multiple Sclerosis, Post-stroke Pain, Myelopathies) | • Symptoms: abnormal sensations, heightened pain response  
• Exam: decrease in functional mobility/ROM, weakness, spasticity  
• Imaging: X-ray, MRI, CT Scan | • Physical therapy including appropriate exercise, GMI, CBT, ACT, bracing, pain neuroscience education  
• Interdisciplinary Chronic Pain Program if meets all inclusion criteria |
| **Musculoskeletal Pain** (ex. Arthritic joint pain, Myofascial Pain Syndrome) | • Symptoms: muscle aches, muscle spasms, tender to palpation, joint stiffness, pain with movement or rest  
• Exam: decrease in functional mobility/ROM, weakness, palpable trigger points  
• Imaging: X-ray, MRI | • Physical therapy including appropriate exercise, aquatic therapy, yoga, Pilates, GMI, CBT, ACT TENS, biofeedback, pain neuroscience education  
• Interdisciplinary Chronic Pain Program |
| **Inflammatory Pain** (ex. Rheumatoid Arthritis, Infection, Post-op Pain, Tissue Injury) | • Symptoms: increased redness, warmth, swelling, and pain  
• Exam: decrease in functional mobility/ROM, weakness  
• Imaging: X-ray, bone scan | • Physical therapy including appropriate exercise, aquatic therapy, GMI, CBT, ACT, pain neuroscience education  
• Interdisciplinary Chronic Pain Program |
<table>
<thead>
<tr>
<th>LOCATION</th>
<th>ADDRESS</th>
<th>PHONE NUMBER</th>
<th>WEBSITE</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABS Pilates (Pilates)</td>
<td>238 South State Route 605 Sunbury, OH 43230</td>
<td>(614) 499-6770</td>
<td><a href="http://www.a-b-spilates.com">www.a-b-spilates.com</a></td>
</tr>
<tr>
<td>Arthritis Foundation</td>
<td></td>
<td></td>
<td><a href="http://www.arthritis.org">www.arthritis.org</a></td>
</tr>
<tr>
<td>Columbus Aquatic Center</td>
<td>1160 Hunter Ave, Columbus, OH 43201</td>
<td>(614) 645-3129</td>
<td><a href="http://www.columbus.gov">www.columbus.gov</a></td>
</tr>
<tr>
<td>Columbus Tai Chi (Tai Chi)</td>
<td>3436 Heritage Club Dr. South, Hilliard, OH 43026</td>
<td>(614) 517-6404</td>
<td><a href="http://www.taichicolumbus.com">www.taichicolumbus.com</a></td>
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<tr>
<td>Exercise Is Medicine</td>
<td>OSU Sports Medicine Healthy New Albany</td>
<td></td>
<td><a href="http://www.wexnermedical.osu.edu/fitness/health">www.wexnermedical.osu.edu/fitness/health</a></td>
</tr>
<tr>
<td>Local Fitness Centers</td>
<td>Located throughout Columbus and surrounding suburbs</td>
<td></td>
<td>*Ex. Lifetime Fitness, YMCA’s, Planet Fitness, L.A. Fitness, Community Recreation Centers, Jewish Community Center, etc.</td>
</tr>
<tr>
<td>Ohio State Center for Wellness and Prevention</td>
<td>2050 Kenny Rd # 1010, Columbus, OH 43221</td>
<td>(614) 293-2800</td>
<td><a href="https://wexnermedical.osu.edu/locations-and-parking/center-for-wellness-and-prevention">https://wexnermedical.osu.edu/locations-and-parking/center-for-wellness-and-prevention</a></td>
</tr>
<tr>
<td>Pilates Innovations (Pilates)</td>
<td>4245 N. High Street Columbus, OH 43214</td>
<td>(614) 388-8939</td>
<td><a href="http://www.pilatesinnovations.org">www.pilatesinnovations.org</a></td>
</tr>
<tr>
<td>Silver Sneakers</td>
<td>Located throughout Columbus and surrounding suburbs</td>
<td></td>
<td>*Available through most Medicare Advantage plans at various gyms/fitness centers (Ex. YMCA’s, Lifetime Fitness)</td>
</tr>
<tr>
<td>Shift Grandview (Tai Chi)</td>
<td>1520 West 1st Ave Grandview Heights, Columbus, OH 43212</td>
<td>(614) 407-4668</td>
<td><a href="http://www.shiftgrandview.com">www.shiftgrandview.com</a></td>
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<tr>
<td>The Pilates Studio</td>
<td>1700 W. Lane Ave, Columbus, OH 43221</td>
<td>(614) 485-9145</td>
<td><a href="http://www.thepilatesstud.io/upper-arlington">www.thepilatesstud.io/upper-arlington</a></td>
</tr>
<tr>
<td>Turning Point Fitness (Pilates)</td>
<td>5890 Chandler Ct. Westerville, OH 43082</td>
<td>(614) 895-1433</td>
<td><a href="http://www.turningpointfit.com">www.turningpointfit.com</a></td>
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<tr>
<td>Wesley Ridge Aquatic Center</td>
<td>2225 Taylor Park Dr Reynoldsburg, OH 43068</td>
<td>(614) 902-3820</td>
<td><a href="http://www.wesleyridge.com/harcum-fitness-and-aquatic-center">www.wesleyridge.com/harcum-fitness-and-aquatic-center</a></td>
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<tr>
<td>Yoga Physical Therapist- Stephanie Carter Kelley, PhD</td>
<td></td>
<td>(614)-949-9930</td>
<td><a href="http://stephaniecarterkelley.com/contact">http://stephaniecarterkelley.com/contact</a></td>
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</tbody>
</table>
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Jae-Young Lim, MD, PhD, Esther Tchai, PhD, Soong-Nang Jang, RN, MPH, PhD. Effectiveness of Aquatic Exercise for Obese Patients with Knee Osteoarthritis: A Randomized Controlled Trial. Cleveland Clinic Journal of Medicine. 2010; 2: 723-731.


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