Title: FMT Vibration Specialist

CEU CREDITS: 6 hours

CEUs may be offered for PT, DC, ATC, OT, LMTs, LAc – depending on location and class type.

Prerequisite: None

COURSE SUPPLIES & RECOMMENDATIONS FOR PARTICIPANTS:

All supplies for this course are provided for attendees. (Vibration massage device, vibration cups, and kinesiology tape). In addition, digital course manuals will be provided. Participants should arrive with comfortable clothing to allow for full range of motion and application of massager, cups and tape. Participants are responsible for snacks, lunches, drinks, and writing materials.

COURSE DESCRIPTION:

FMT **Vibration Specialist** course amalgamates manual therapy and vibration science to create simple and effective non-opioid, neuro musculoskeletal (NMSK) *treatment and selfcare programs for the manual and movement therapist as well as the athlete. NMSK injuries are one of the leading causes of disability in the United States*.

Discover why using vibration-based therapies are effective interventions for pain management, improving mobility and movement dynamics. A holistic (whole person) approach to movement and functional rehabilitation will be presented to aid in identifying key areas of compromise within the NMSK system. This course is an evidence-informed rehabilitation program that redefines our understanding of the effects of vibration in conjunction with traditional manual therapies (myofascial cupping, local/targeted massage) on pain mitigation, injury recovery/prevention and movement.

The primary goal of this course is to help PT's, OT's, DC's, ATC's, LMT's, other movement therapists and athletes identify and address common NMSK injuries with an innovative functional reappraisal process that includes an external and internal remapping process to help a patient/client reengage in meaningful movement with more confidence and less pain.

This course is intended for health and wellness professionals with all levels of experience of rehabilitation programming and taping. The cost of this course includes a vibration massager kit, vibration cup set, and a roll of kinesiology tape. All supplies needed for the course are provided.

Functional Movement Training (FMT) courses are led by industry leading experts in movement assessment and therapy.

Education Objectives of FMT Vibration Specialist Course: At the conclusion of the course, attendees will be able to:

1. Discuss the role of a systematic approach to mobility, motor control and stability with the goal of movement reengagement.
2. Discuss and implement a somatic reappraisal process to identify and address neuropsychosocial symptoms associated with the NMSK dysfunction.

3. Discuss and experience the neuro-psycho-physiological effects of different frequencies of vibration
4. Demonstrate functional use of vibration tools (compressive and decompressive) and understand their role and use for the applications of rehabilitation, edema management, injury recovery, posture and dynamic movement management
5. Demonstrate and discuss the new understanding of manipulating the 'neuromyofascial' system.
6. Demonstrate and discuss the use of vibration massager and vibrating cups with a psycho-social approach to care.
7. A systematic approach to treatment of common NMSK conditions with a process that includes scanning, connecting, and rippling (following fascial chains).
8. Integrating multiple breathing patterns to help facilitate positive NMSK outcomes.
9. Introduce and discuss how therapists can guide patients/clients in exploring the interoceptive aspects of the pain experience.

FMT Vibration Specialist - COURSE OUTLINE & SCHEDULE

Hour One

- Brief outline of the course; the topics that will be covered, practical/case studies
- Identifying the problem – MSK Injury statistics (Burden of Disease Data)
- Introduction of FMT Movement Pyramid
- History of vibration therapy
- Present and Future of vibration therapy as it pertains to human movement and the pain experience
- Touch science review. Exteroceptive, interoceptive and kinesthetic components to touch.

Hour Two

- Vibration Science
    - Mechanisms
        - Mechanical Effects
        - Fluid/Vascular Effects
        - Chemical/Hormonal Effects
        - Skin-brain Connection
        - Psychological Effects
    - Risk Prevention
    - Research – Vibration effects on pain, human movement, special populations and performance
    - General Vibration Application Rules (Indications/Contraindications)
    - Focal Vibration Therapy – General Technique Considerations
        - Dosage Parameters
        - Scan, Connect, Ripple Approach

15-minute Break

Hour Three

- Effects of Compression and Vibration on the human body
- Focal Compressive Vibration Therapy (Scan, Connect, Ripple):
    - Common MSK Injury applications:
        - Trunk practical applications and case studies
        - Upper Extremity practical applications and case studies

Hour Four

- Continued…
    - Lower Extremity – compressive vibration practical application and case studies
- Effects of decompression, shear, and vibration on the human body
- Decompressive (Cupping) Vibration Therapy
    - Common Decompression/Vibration Applications:
        - Trunk – Low Back, Cervical conditions

1 Hour Lunch

Hour Five

- **Common Applications**
    - **Upper Extremity – Shoulder, Elbow, Wrist/Hand**
    - **Lower Extremity – Knee, Calf, Foot**
- Expanded (Somatic-Psychological Approach) View of Pain Science
    - Introducing the history and application of body psychotherapy and body awareness approached to manual therapy
    - Somatic/Interoceptive Re-appraisal Process – Emotional Mapping
        - Holistic Approach to Manual Therapy

Hour Six

- Concept: Painting the Area: Novel and Safe Inputs to the Nervous System
- Concept: Connect to Stimulus (Combination Vibration Therapy - Compressive/Decompressive Stacking)
- Concept: Non-Judgmental Interpretation (What do you Feel?)
    - Psycho-Social Tactics
        - Task Positive Network – How to Influence Affective Aspects of Pain and Movement.
- Concept: Breath Stacking – adding breath into the treatment experience
- Concept: Meaningful Movement Reintroduction
- Case Study – See One, Do One, Teach One Approach
    - Workshop the application of kinesiology tape and compressional floss bands for common MSK injuries.

References APA

1. Field, T., Peck, M., Hernandez-Reif, M., Krugman, S., Burman, I. & Ozment-Schenck, L. (2000). Post burn itching, pain, and psychological symptoms are reduced with massage therapy. Journal of Burn Care and Rehabilitation, 21, 189-193.
2. Diego, M. & Field, T. (2009). Moderate Pressure Massage Elicits a Parasympathetic Nervous System Response. International Journal of Neuroscience, 119, 630-639.
3. Ingber DE (2003) Tensegrity II. How structural networks influence cellular information processing networks. Journal of Cell Science 116:1397–1408
4. Lieber RL, Shah S, Fridén J (2002) Cytoskeletal disruption after eccentric contraction-induced muscle injury. Clinical Orthopaedics and Related Research 403:90–99
5. Morhenn V, Beavin LE, Zak PJ. Massage increases oxytocin and reduces

adrenocorticotropin hormone in humans. Altern Ther Health Med. 2012 Nov-Dec;18(6):11-8.
6. Takahashi T. (2021). Sensory Stimulation of Oxytocin Release Is Associated With Stress Management and Maternal Care. Frontiers in psychology, 11, 588068. https://doi.org/10.3389/fpsyg.2020.588068
7. McGlone F, Wessberg J, Olausson H. Discriminative and affective touch: sensing and feeling. Neuron. 2014 May 21;82(4):737-55.
8. Saggini, Raoul. The Mechanical Vibration: Therapeutic Effects and Applications (p. 42). Bentham Science Publishers. Kindle Edition.
9. Chen CS, Ingber DE. Tensegrity and mechanoregulation: from skeleton to cytoskeleton. Osteoarthritis Cartilage 1999; 7(1): 81-94.
10. Field, T., Ironson, G., Scafidi, F., Nawrocki, T.,Goncalves, A., Burman, I. , Pickens, J., Fox, N., Schanberg, S., & Kuhn, C. (1996). Massage therapy reduces anxiety and enhances EEG pattern of alertness and math computations. International Journal of Neuroscience, 86, 197-205.
11. Hernandez-Reif, M., Field, T., Krasnegor, J. & Theakston, H.(2000). High blood pressure and associated symptoms were reduced by massage therapy. Journal of Bodywork and Movement Therapies, 4, 31-38.
12. Filippi, G. M., Fattorini, L., Summa, A., Zagaglia, A., & Rodio, A. (2020). Effects of focal vibration on power and work in multiple wingate tests. Biology of sport, 37(1), 25–31. https://doi.org/10.5114/biolsport.2020.89938
13. Avvantaggiato C, Casale R, Cinone N, Facciorusso S, Turitto A, Stuppiello L, Picelli A, Ranieri M, Intiso D, Fiore P, Ciritella C, Santamato A. Localized muscle vibration in the treatment of motor impairment and spasticity in post-stroke patients: a systematic review. Eur J Phys Rehabil Med. 2021 Feb;57(1):44-60.
14. Tan J, Shi X, Witchalls J, Waddington G, Lun Fu AC, Wu S, Tirosh O, Wu X, Han J. Effects of Pre-exercise Acute Vibration Training on Symptoms of Exercise-Induced Muscle Damage: A Systematic Review and Meta-Analysis. J Strength Cond Res. 2020 Aug 12.
15. Wei Li, Chong Li, Quan Xu, Linhong Ji, "Effects of Focal Vibration over Upper Limb Muscles on the Activation of Sensorimotor Cortex Network: An EEG Study", Journal of Healthcare Engineering, vol. 2019, Article ID 9167028, 7 pages, 2019.
16. Bakhtiary AH, Safavi-Farokhi Z, Aminian-Far A (2007) Influence of vibration on delayed onset of muscle soreness following eccentric exercise. Br J Sports Med 41:145–148
17. Dye S (1996). The knee as a biologic transmission with an envelope of function: a theory. Clinical Orthopaedics and Related Research (325),:10-18.
18. Cardinale M, Bosco C. The use of vibration as an exercise intervention. Exerc Sport Sci Rev. 2003 Jan;31(1):3-7.
19. Fontana TL, Richardson CA, Stanton WR. The effect of weight-bearing exercise with low frequency, whole body vibration on lumbosacral proprioception: a pilot study on normal subjects. Aust J Physiother. 2005;51(4):259-63.
20. Albasini, A., Krause, M., and Rembitzki, I. Using Whole Body Vibration in Physical Therapy and Sport E-Book: Clinical practice and treatment exercises. Churchill Livingston. 2010Ward NS, Cohen LG. Mechanisms underlying recovery of motor function after stroke. Arch Neurol. (2004) 61:1844–8.
21. Marconi B, Filippi GM, Koch G, Giacobbe V, Pecchioli C, Versace V, et al. Long-term effects on cortical excitability and motor recovery induced by repeated muscle vibration in chronic stroke patients. Neurorehabil Neural Repair. (2011) 25:48–60.
22. Caliandro P, Celletti C, Padua L, Minciotti I, Russo G, Granata G, et al. Focal muscle vibration in the treatment of upper limb spasticity: a pilot randomized controlled trial in patients with chronic stroke. Arch Phys Med Rehabil. (2012) 93:1656–61.

23. Brunetti O, Filippi GM, Lorenzini M, Liti A, Panichi R, Roscini M, Pettorossi VE, Cerulli G. Improvement of posture stability by vibratory stimulation following anterior cruciate ligament reconstruction. Knee Surg Sports Traumatol Arthrosc. 2006 Nov;14(11):1180-7.
24. Marconi B, Filippi GM, Koch G, Pecchioli C, Salerno S, Don R, Camerota F, Saraceni VM, Caltagirone C. Long-term effects on motor cortical excitability induced by repeated muscle vibration during contraction in healthy subjects. J Neurol Sci. 2008 Dec 15;275(1-2):51-9.
25. Fattorini L, Rodio A, Pettorossi VE, Filippi GM. Is the Focal Muscle Vibration an Effective Motor Conditioning Intervention? A Systematic Review. J Funct Morphol Kinesiol. 2021 Apr 28;6(2):39.
26. Steyvers, M.; Levin, O.; van Baelen, M.; Swinnen, S.P. Corticospinal excitability changes following prolonged muscle tendon vibration. Neuroreport 2003, 14, 2001–2004.
27. Fattorini, L.; Ferraresi, A.; Rodio, A.; Azzena, G.B.; Filippi, G.M. Motor performance changes induced by muscle vibration. Eur. J. Appl. Physiol. 2006, 98, 79–87.
28. Aprile, I.; di Sipio, E.; Germanotta, M.; Simbolotti, C.; Padua, L. Muscle focal vibration in healthy subjects: Evaluation of the effects on upper limb motor performance measured using a robotic device. Eur. J. Appl. Physiol. 2016, 116, 729–737. Busch V, Magerl W, Kern U, Haas J, Hajak G, Eichhammer P. The effect of deep and slow breathing on pain perception, autonomic activity, and mood processing--an experimental study. Pain Med. 2012 Feb;13(2):215-28.
29. Broggi G. Pain and psycho-affective disorders. Neurosurgery. 2008 Jun;62(6 Suppl 3):901-19; discussion 919-20.
30. Badra LJ, Cooke WH, Hoag JB, et al. Respiratory modulation of human autonomic rhythms. American Journal of physiology. Heart and Circulatory Physiology. 2001 Jun;280(6):H2674-88. DOI: 10.1152/ajpheart.2001.280.6.h2674. PMID: 11356624.
31. Suarez-Roca, H., Klinger, R. Y., Podgoreanu, M. V., Ji, R. R., Sigurdsson, M. I., Waldron, N., Mathew, J. P., & Maixner, W. (2019). Contribution of Baroreceptor Function to Pain Perception and Perioperative Outcomes. Anesthesiology, 130(4), 634–650. https://doi.org/10.1097/ALN.0000000000002510
32. Meller T, Stiehm F, Malinowski R, Thieme K. Baroreflexsensitivität und chronischer Schmerz : Pathogenetische Bedeutsamkeit und klinische Implikationen [Baroreflex sensitivity and chronic pain : Pathogenetic significance and clinical implications]. Schmerz. 2016 Oct;30(5):470-476. German. doi: 10.1007/s00482-016-0150-5. PMID: 27604471.
33. Murillo, N., Valls-Sole, J., Vidal, J., Opisso, E., Medina, J., & Kumru, H. (2014). Focal vibration in neurorehabilitation. European Journal of Physical and Rehabilitation Medicine, 50(2), 231–42.
34. Cochrane DJ. Effectiveness of using wearable vibration therapy to alleviate muscle soreness. Eur J Appl Physiol. 2017 Mar;117(3):501-509.
35. Kerschan-Schindl K, Grampp S, Henk C, Resch H, Preisinger E, Fialka-Moser V, Imhof H. Whole-body vibration exercise leads to alterations in muscle blood volume. Clin Physiol. 2001 May;21(3):377-82.Bosco, C., Cardinale, M. and Tsarpela, O. (1999a) Influence of vibration on mechanical power and electromyogram activity in human arm flexor muscles. European Journal of Applied Physiology and Occupational Physiology 79, 306-311.
36. Torvinen, S., Kannus, P., Sievanen, H., Jarvinen, T.A.H., Pasanen, M., Kontulainen, S., Jarvinen, T.L.N., Jarvinen, M., Oja, P. and Vuori, I. (2002) Effect of a vibration exposure on muscular performance and body balance. Randomized cross-over study. Clinical Physiology and Functional Imaging 22, 145-152.
37. Valenzuela-Moguillansky (2012). The Relationship between Pain and Body Awareness: an Investigation Using Experimental and Experiential Methods. Ph.D. thesis, Université Pierre et Marie Curie, Paris.

38. Bray, H., and Moseley, G. L. (2011). Disrupted working body schema of the trunk in people with back pain. Br. J. Sports Med. 45, 168–173. doi: 10.1136/bjsm.2009.061978
39. Mehling, W. E., Gopisetty, V., Daubenmier, J., Price, C. J., Hecht, F. M., and Stewart, A. (2009). Body awareness: construct and self-report measures. PLoS ONE 4:e5614. doi: 10.1371/journal.pone.0005614
40. Valenzuela-Moguillansky C, Reyes-Reyes A, Gaete MI. Exteroceptive and Interoceptive Body-Self Awareness in Fibromyalgia Patients. Front Hum Neurosci. 2017 Mar 13;11:117. doi: 10.3389/fnhum.2017.00117. PMID: 28348526; PMCID: PMC5346579.
41. Crofford L. J. (2015). Chronic Pain: Where the Body Meets the Brain. Transactions of the American Clinical and Climatological Association, 126, 167–183.
42. Merskey H, Albe Fessard D, Bonica JJ, et al. Pain terms: a list with definitions and notes on usage. Recommended by the IASP subcommittee on taxonomy. Pain. 1979;6:249-252.Rauch, F. (2009). Vibration therapy. Developmental Medicine & Child Neurology, 51, 166-168.
43. Peterka, R. J. (2002). Sensorimotor integration in human postural control. Journal of neurophysiology, 88(3), 1097-1118.
44. Peer, K. S., Barkley, J. E., & Knapp, D. M. (2009). The acute effects of local vibration therapy on ankle sprain and hamstring strain injuries. The Physician and sports medicine, 37(4), 31-38.
45. Paoloni, M., Tavernese, E., Fini, M., Sale, P., Franceschini, M., Santilli, V., & Mangone, M. (2014). Segmental muscle vibration modifies muscle activation during reaching in chronic stroke: A pilot study. NeuroRehabilitation, 35(3), 405-414.
46. Noma, T., Matsumoto, S., Shimodozono, M., Etoh, S., & Kawahira, K. (2012). Anti-spastic effects of the direct application of vibratory stimuli to the spastic muscles of hemiplegic limbs in post-stroke patients: a proof-of-principle study. Journal of rehabilitation medicine, 44(4), 325-330.
47. Marín, P. J., Martín-López, A., Vicente-Campos, D., Angulo-Carrere, M. T., García-Pastor, T., Garatachea, N., & Chicharro, J. L. (2011). Effects of vibration training and detraining on balance and muscle strength in older adults. Journal of sports science & medicine, 10(3), 559.
48. Thorpe, D. (2007). The effect of whole body vibration on lower extremity skin blood flow in normal subjects. Medical Science Monitor, 13(2), CR71-CR76.
49. Bosco, C., Colli, R., Introini, E., Cardinale, M., Tsarpela, O., Madella, A., Tihanyi, J. and Viru, A. (1999b) Adaptive responses of human skeletal muscle to vibration exposure. Clinical Physiology 19, 183-187.
50. Monroe, Todd & Gore, John & Bruehl, Stephen & Benningfield, Margaret & Dietrich, Mary & Chen, Li Min & Newhouse, Paul & Fillingim, Roger & Chodkowski, BettyAnn & Atalla, Sherien & Arrieta, Julian & Damon, Stephen & Blackford, Jennifer & Cowan, Ronald. (2015). Sex differences in psychophysical and neurophysiological responses to pain in older adults: A cross-sectional study. Biology of sex differences. 6. 25. 10.1186/s13293-015-0041-y.
51. J. Vriens et al., Neuron 70, 482–494 (2011).
52. H. Cho et al., Nat. Neurosci. 15, 1015–1021 (2012)
53. Kucyi, A., Salomons, T. V., & Davis, K. D. (2013). Mind wandering away from pain dynamically engages antinociceptive and default mode brain networks. Proceedings of the National Academy of Sciences of the United States of America, 110(46), 18692–18697.
54. Cohen, M., Quintner, J., & van Rysewyk, S. (2018). Reconsidering the International Association for the Study of Pain definition of pain. Pain reports, 3(2), e634.
55. Caliandro, P., Celletti, C., Padua, L., Minciotti, I., Russo, G., Granata, G., ... & Camerota, F. (2012). Focal muscle vibration in the treatment of upper limb spasticity: a pilot randomized

controlled trial in patients with chronic stroke. Archives of physical medicine and rehabilitation, 93(9), 1656-1661
56. Burke, J. R., Schutten, M. C., Koceja, D. M., & Kamen, G. (1996). Agedependent effects of muscle vibration and the Jendrassik maneuver on the patellar tendon reflex response. Archives of Physical Medicine and Rehabilitation, 77(6), 600-604
57. Ridgel, A. L., Narducci, E. A., & Corbett, D. B. (2013). Effects of repeated bouts of segmental vibration therapy on balance in Parkinson's disease. Journal of Palliative Care & Medicine, 1(104), 2.A critical evaluation of percussion muscle gun therapy as a rehabilitation tool focusing on lower limb mobility. A literature review
58. Hohwy, J. (2013). The predictive mind. New York, NY: Oxford University Press.
59. Friston, K. J. (2010). The free-energy principle: A unified brain theory? Nature Reviews Neuroscience, 11(2), 127–138. doi: 10.1038/nrn2787
60. Wiech, K. (2016). Deconstructing the sensation of pain: The influence of cognitive processes on pain perception. Science, 354(6312), 584-587. doi: 1126/science.aaf8934
61. Tabor, A., Thacker, M.A., Moseley, G.L., & Kording, K.P. (2017). Pain: A statistical account. PLoS
62. Khalsa, S., et al. (2018). Interoception and Mental Health: A roadmap. Biological Psychiatry: Cognitive neuroscience and neuroimaging, 3 (6): 501-513.
63. Farb, N., et al., (2015). Interoception, Contemplation, and Health. Frontiers in Psychology, 6:763.
64. Mahler, Kelly (2015). Interoception: The Eight Sensory System. AAPC Publishing, Lenexa, Kansas
65. Craig, A.D. (Bud). (2014). How do you feel? An interoceptive moment with your neurobiological self. Princeton University Press.
66. Mehling, W., et al. (2012). The Multidimensional Assessment of Interoceptive Awareness (MAIA). PLoS One, 7(11): e48230.
67. Cameron, O. (2001). Interoception: the inside story – a model for psychosomatic processes. Psychosomatic Medicine, 63: 697-710.
68. Wiech K. Deconstructing the sensation of pain: The influence of cognitive processes on pain perception. Science. 2016 Nov 4;354(6312):584-587.
69. Ozer, S. T., Karabay, D., & Yesilyaprak, S. S. (2018). Taping to Improve Scapular Dyskinesis, Scapular Upward Rotation, and Pectoralis Minor Length in Overhead Athletes. *Journal of athletic training*, *53*(11), 1063-1070.
70. Kawanishi, K., & Kudo, S. (2018). Quantitative analysis of gliding between subcutaneous tissue and vastus lateralis-influence of the dense connective tissue of the myofascia. *Journal of Bodywork and Movement Therapies*, *22*(4), 850.
71. Li, Y., Yin, Y., Jia, G., Chen, H., Yu, L., & Wu, D. (2018). Effects of kinesiotape on pain and disability in individuals with chronic low back pain: a systematic review and meta-analysis of randomized controlled trials. *Clinical rehabilitation*, 0269215518817804.
72. De Ridder, R., Willems, T., Vanrenterghem, J., Verrelst, R., De Blaiser, C., & Roosen, P. (2019). Taping Benefits Ankle Joint Landing Kinematics in Subjects With Chronic Ankle Instability. *Journal of sport rehabilitation*, (00), 1-6.
73. Masters, A., Netto, K. J., Brooker, S., Hopper, D., & Liew, B. (2018). Hip Taping Positively Alters Running Kinematics in Asymptomatic Females. *International journal of sports medicine*, *39*(14), 1068-1074.
74. Cavaleri, R., Thapa, T., Beckenkamp, P. R., & Chipchase, L. S. (2018). The influence of kinesiology tape colour on performance and corticomotor activity in healthy adults: a randomised crossover controlled trial. *BMC Sports Science, Medicine and Rehabilitation*, *10*(1), 17.

75. Yildirim, P., Dilek, B., ŞAHİN, E., GÜLBAHAR, S., & Kizil, R. (2018). Ultrasonographic and clinical evaluation of additional contribution of kinesiotaping to tendon and nerve gliding exercises in the treatment of carpal tunnel syndrome. *Turkish journal of medical sciences*, *48*(5), 925-932.
76. Wang, C. K., Fang, Y. H. D., Lin, L. C., Lin, C. F., Kuo, L. C., Chiu, F. M., & Chen, C. H. (2019). Magnetic Resonance Elastography in the Assessment of Acute Effects of Kinesio Taping on Lumbar Paraspinal Muscles. *Journal of Magnetic Resonance Imaging*, *49*(4), 1039-1045.
77. Song, C. Y., Huang, H. Y., Chen, S. C., Lin, J. J., & Chang, A. H. (2015). Effects of femoral rotational taping on pain, lower extremity kinematics, and muscle activation in female patients with patellofemoral pain. *Journal of science and medicine in sport*, *18*(4), 388-393.
78. Montalvo, A. M., Cara, E. L., & Myer, G. D. (2014). Effect of kinesiology taping on pain in individuals with musculoskeletal injuries: systematic review and meta-analysis. *The Physician and sportsmedicine*, *42*(2), 48-57.
79. Stecco, A., Meneghini, A., Stern, R., Stecco, C., & Imamura, M. (2014). Ultrasonography in myofascial neck pain: randomized clinical trial for diagnosis and follow-up. *Surgical and Radiologic Anatomy*, *36*(3), 243-253.
80. Kafa, N., Citaker, S., Omeroglu, S., Peker, T., Coskun, N., & Diker, S. (2015). Effects of kinesiologic taping on epidermal–dermal distance, pain, edema and inflammation after experimentally induced soft tissue trauma. *Physiotherapy theory and practice*, *31*(8), 556-561.
81. Devereaux, M., Velanoski, K. Q., Pennings, A., & Elmaraghy, A. (2016). Short-term effectiveness of precut kinesiology tape versus an NSAID as adjuvant treatment to exercise for subacromial impingement: A randomized controlled trial. *Clinical Journal of Sport Medicine*, *26*(1), 24-32.
82. Lim, E. C. W., & Tay, M. G. X. (2015). Kinesio taping in musculoskeletal pain and disability that lasts for more than 4 weeks: is it time to peel off the tape and throw it out with the sweat? A systematic review with meta-analysis focused on pain and also methods of tape application. *Br J Sports Med*, *49*(24), 1558-1566.
83. Luque-Suarez, A., Navarro-Ledesma, S., Petocz, P., Hancock, M. J., & Hush, J. (2013). Short term effects of kinesiotaping on acromiohumeral distance in asymptomatic subjects: a randomised controlled trial. *Manual therapy*, *18*(6), 573-577.
84. Aydoğdu, O., Sari, Z., Yurdalan, S. U., & Polat, M. G. (2017). Clinical outcomes of kinesio taping applied in patients with knee osteoarthritis: a randomized controlled trial. *Journal of back and musculoskeletal rehabilitation*, *30*(5), 1045-1051.
85. Dong W, Goost H, Lin XB, et al. Treatments for Shoulder Impingement Syndrome: A PRISMA Systematic Review and Network Meta-Analysis. Medicine (Baltimore). Vol 94. United States 2015:510
86. Burfeind, S. M., & Chimera, N. (2015). Randomized control trial investigating the effects of kinesiology tape on shoulder proprioception. *Journal of sport rehabilitation*, *24*(4), 405-412.
87. Anandkumar, S., Sudarshan, S., & Nagpal, P. (2014). Efficacy of kinesio taping on isokinetic quadriceps torque in knee osteoarthritis: a double blinded randomized controlled study. *Physiotherapy theory and practice*, *30*(6), 375-383.
88. Smykla, A., Walewicz, K., Trybulski, R., Halski, T., Kucharzewski, M., Kucio, C., ... & Taradaj, J. (2013). Effect of Kinesiology Taping on breast cancer-related lymphedema: a randomized single-blind controlled pilot study. *BioMed research international*, *2013*.
89. de-la-Torre-Domingo, C., Alguacil-Diego, I. M., Molina-Rueda, F., López-Román, A., & Fernández-Carnero, J. (2015). Effect of kinesiology tape on measurements of balance in subjects with chronic ankle instability: a randomized controlled trial. *Archives of physical*

medicine and rehabilitation, *96*(12), 2169-2175.
90. Lee, S. M., & Lee, J. H. (2015). Ankle inversion taping using kinesiology tape for treating medial ankle sprain in an amateur soccer player. *Journal of physical therapy science*, *27*(7), 2407-2408.
91. Luque-Suarez, A., Navarro-Ledesma, S., Petocz, P., Hancock, M. J., & Hush, J. (2013). Short term effects of kinesiotaping on acromiohumeral distance in asymptomatic subjects: a randomised controlled trial. *Manual therapy*, *18*(6), 573-577.
92. Shakeri, H., Keshavarz, R., Arab, A. M., & Ebrahimi, I. (2013). Clinical effectiveness of kinesiological taping on pain and pain-free shoulder range of motion in patients with shoulder impingement syndrome: a randomized, double blinded, placebo-controlled trial. *International Journal of Sports Physical Therapy*, *8*(6), 800.
93. Brito, L. B. B., Ricardo, D. R., de Araújo, D. S. M. S., Ramos, P. S., Myers, J., & de Araújo, C. G. S. (2014). Ability to sit and rise from the floor as a predictor of all-cause mortality. *European journal of preventive cardiology*, *21*(7), 892-898.

TEACHING METHODS USED:

1. Power Point Presentation
2. Demonstration
3. Small Group/Partner Practice Sessions