Introduction to Movement System Impairment Syndromes of the Lumbar Spine

Course description:

The virtual introductory course consists of lectures and related research about movement system impairment (MSI) syndromes of the lumbar spine. Participants will be required to view a series of pre-recorded lectures describing the MSI concepts, principles, best available evidence, and the role of abdominals. During the course, the content of the lecture will be reviewed and applied to the lumbar spine. Specific syndromes of the lumbar spine will be described.  The systematic examination for lumbar movement system impairment syndrome is available to study prior to the course in the pre-recorded videos, and the specific tests will be demonstrated with live subjects during the course. Systematic examination as well as the relationships of the specific test results to the diagnosis and treatment program will be described.  The role of the hip as a contributing factor to lumbar spine dysfunction will be discussed. Video demonstration of the examination of patients with low back pain will be presented. Participants will be able to interact with the presenters and participate in smaller breakout rooms to practice skills in examination and diagnosis.

Course objectives:

1.     Describe the kinesiopathological model, concepts and principles of movement system impairment syndromes.

2.     Describe the adaptations of muscle, nerve, and bone associated with repeated movements and sustained alignments.

3.     Describe the concepts of relative flexibility, relative stiffness, and motor learning as determinants of the path of least resistance which is associated with changes in precision of movement.

4.     Understand the importance of a systemic examination which includes specific tests and task analysis.

5.     Recognize impaired alignment and movement patterns of the lumbar spine.

6.     Identify the interaction of the hip and lumbar spine.

7.     Recognize movement system impairment syndromes associated with painful conditions of the lumbar spine.

8.     Be able to identify the contributing factors to the lumbar movement system impairment syndrome.

9.     Describe how the results of the examination guide the development of a treatment program with an emphasis on task performance.

Course schedule:

Day 1: Saturday June 10, 2023 (6.5 hours of learning)

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| Time | Topic |
| 9am-10:30am | MSI Intro Lecture (Shirley) |
| 10:30-10:45am | Break |
| 10:45am-12pm | BREAKOUT ROOMSAlignment and trunk forward bending patterns. Participants need to observe photos / videos to state what patterns of impairments they notice. |
| 12pm-1pm | Lunch |
| 1pm-2pm | Lumbar Syndromes Lecture (Nancy) |
| 2-3:30pm | Pre-recorded lumbar case (Shirley) |
| 3:30-3:45pm | Break |
| 3:45-5pm | Live demonstration on a subject and treatment (Shirley) |

Day 2: Sunday June 11, 2023 (6.5 hours of learning)

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| Time | Topic |
| 9am-10:30am | Hip and Back Interactions Lecture (Nancy) |
| 10:30-10:45am | Break |
| 10:45am-12pm | BREAKOUT ROOMSPre-recorded video lumbar case. Participants need to state findings of the test and come up with Lumbar Dx. |
| 12pm-1pm | Lunch |
| 1pm-2:30pm | Live demonstration on Suzy (Shirley) and discuss treatment |
| 2:30-2:45pm | Break |
| 2:45-4:15pm | Live demonstration (Shirley) and discuss treatment |
| 4:15-5pm | Abbreviated Examination and Q&A (Nancy, Shirley) |

Speaker profiles:

**Shirley Sahrmann, PT, PhD, FAPTA**

Dr. Sahrmann is professor emerita of physical therapy at Washington University in St. Louis. She received her BS degree in physical therapy, masters and PhD in neurobiology from Washington University, where she was a clinician and faculty member for 56 years. Her research interests were in disordered motor control and classification of musculoskeletal disorders. Dr. Sahrmann with her colleagues at Washington University has been a major promotor of the movement system and the development of movement related diagnostic categories to direct physical therapy treatment which formed the basis of her published books. She has lectured extensively nationally and internationally.

**Nancy Bloom, PT, DPT, MSOT**

Dr. Bloom is a professor of physical therapy and orthopaedic surgery at Washington University School of Medicine.  She received both her master’s degree in occupational therapy and her clinical doctorate in physical therapy from Washington University. She teaches in a wide variety of courses and treats multiple types of musculoskeletal problems. Nancy has taught numerous continuing education courses on the topic of Diagnosis and Treatment of Movement System Impairment Syndromes and has made several national and international presentations.

Course Bibliography (lumbar spine):

1. **van Dillen LR**, Lanier VM, Steger-May K, Wallendorf M, Norton BJ, Civello JM, Czuppon SL, Francois SJ, Roles K, Lang CE. Effect of motor skill training in functional activities vs strength and flexibility exercise on function in people with chronic low back pain – a randomized clinical trial”. *JAMA Neurology* 2021: 385-395.
2. Marich AV, Hwang CT, Sorensen CJ, **Van Dillen LR**. Examination of the lumbar movement pattern during a clinical test and a functional activity test in people with and people without low back pain. 2019, Accepted *Physical Medicine and Rehabilitation*.2020; 12:140-146. doi:10.1002/pmrj.12197.
3. Prather H, **Van Dillen LR**. A narrative review of the links between the hip and the lumbar spine (Hip Spine Syndrome) as they relate to clinical decision making for patients with lumbopelvic pain. *Physical Medicine and Rehabilitation*. 2019:DOI: 10.1002/pmrj.12187.
4. Lanier VM, Lang CE, **Van Dillen LR**. Motor skill training in musculoskeletal pain: a case report in chronic low back pain. *Disability and Rehabilitation.* 2019: 41(17):2071-2079. doi: [10.1080/ 09638288.2018.1460627](https://doi.org/10.1080/09638288.2018.1460627).
5. van Dieën JH, Reeves NP, Kawchuck G, **Van Dillen LR**, Hodges PW. Analysis of motor control in patients with low back pain: A key to personalized care? *Journal of Orthopaedic & Sports Physical Therapy*. 2019: 49(6):380-8. PubMed. PMCID: PMC7393666.
6. van Dieën JH, Reeves NP, Kawchuck G, **Van Dillen LR**, Hodges PW. Motor control changes in low back pain: Divergence in presentations and mechanisms. *Journal of Orthopaedic & Sports Physical Therapy.* 2019; 49(6):370-9. PubMed. PMCID: PMC7393576.
7. Marich AV, Lanier VM, Salsich G, **Van Dillen LR**. The immediate effect of a single session of motor skill training on the lumbar movement pattern during a functional activity in people with low back pain. *Physical Therapy*, 2018;98(7): 605-615. DOI:10.1093/ptj/pzy044.
8. Prather H, Cheng A, Steger-May K, Maheshwari V, **Van Dillen LR.** Association of hip radiograph findings with pain and function in patients presenting with low back pain. *Physical Medicine and Rehabilitation*. 2018; 10: 11-18. DOI: 10.1016/j.pmrj.2017.06.003. PubMed PMID: 28629805.