

Chung-M4 Gait

https://youtu.be/JXuvX_Y-STQ

Female 77 year old diabetic with degenerative scoliosis (DS), arthritis, later-adult onset of chronic low back pain, and sacroiliac joint pain. No walker/cane. Refer to M3 Posture.

Phase 1.

Arms. Right arm (ipsilateral high hip) not free to swing--rests on right hip. Shoulder mobility may be affected by the DS (muscle imbalances proximal and distal to scapulothoracic junction affecting scapula kinematics/congruency). Left arm floppy; "swings" excessively--signaling increased lateral sway, uneven rhythm.

Trunk / Pelvis. No upper-cross syndrome in static posture. Forward-trunk strategy in walking likely compensating for DS and lateral pelvic tilt/pelvic obliquity (LPTPO). Stiff through trunk and lumbopelvic hip (LPH) from DS and possibly as a balance (mediolateral, Winter Stiffness Model) strategy (Cech & Martin, 2012). Limited pelvic transverse motion observed.

Hip. On heel contact, contralateral limited hip extension (HE).

Knee. Increased knee flexion (KF) in contact leg. Unable to achieve the necessary knee extension (KE, both legs).

Ankle. Limited dorsiflexion (DF) at heel contact--possibly from limited ankle mobility and/or stability; also weaknesses of the dorsiflexors. Seems to exhibit normal inverted foot strike (EBFAFitness, 2013). Decreased heel-to-toe transfer. Lack of heel-rocker (limited DF). "High steppage" to clear the foot.

Phase 2.

Arms. See Phase 1.

Trunk / Pelvis. See Phase 1. Possibly limited pelvic rotation (< 40 degrees) (Zackowski, 2011).

Hip. Limited LPH mobility/stability. Adducted (steps too close). Increased hip flexion (trunk forward lean). Limited HE.

Knee. Contact leg exhibits increased KF. Unable to achieve the necessary KE.

Ankle. Limited DF. Reduced heel-to-toe transfer--more ankle rocker (Korfist, n.d.). Heel rises early. Toes pointed outward. Exhibits "high steppage" (Zackowski, 2011). After full weight transference on right side, quick steps to "catch herself" on left side. Lack of weight-bearing stability (and strength) on the right side (Page, Frank, & Lardner, 2010).

Chung 10.21.2015

Phase 3.

Arms. General observations in Phase 1.

Trunk / Pelvis. General observations in Phase 1.

Hip. Same observations as Phase 2.

Knee. Excess KF (through the swing). Limited KE (swing).

Ankle. Limited DF (throughout swing) compensated by "high stepping".

Limitations: video length, client fatigue, cool weather (clothing), outdoor space.

Limited HE could increase the stress in the lumbar area causing further compensations/pain (Page et al., 2010). Scoliosis and trunk-forward strategy alter the forces, proprioception and balance strategy possibly leading to neuromuscular adaptations/poor movement patterns (Page et al., 2010). ClientX was unable to maximize her loading response after initial heel strike (EBFAFitness, 2013). ClientX exhibited an adducted gait even with her toes pointing outward (EBFAFitness, 2013). Her gait was slower; stride length was shorter; and her malalignment caused uneven rhythm (Cech & Martin, 2012).

ClientX is a complex case. Further testing should be done to determine whether DS presentations of dysfunctions are due to mobility, stability, weakness, tightness, or impingement issues. ClientX is deconditioned--exhibits poor muscle tone, overall. Manual testing is needed to determine whether hypo-DF is due to hypomobility, weak dorsiflexors, or peroneal nerve neuropathy (possibly secondary to diabetic foot neuropathy) (Francio, 2014). Gluteus maximus and medius strength may be improved. Limited KE may be due to compensations from the DS (LPH), balance/motor strategy, arthritis, or weakness in extensors.

ClientX's gait may be more similar to Janda's description of proximal gait (increased KF and hip flexion, less ankle stress, fairly level center of gravity) (Page et al., 2010). Please refer to the phase notations where I saw this signs in the video (exceeded word count).

References

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