

Site, Direction and Threshold of	Movement retraining strategy	Notes
Uncontrolled Movement (UCM)	Week 1 & 2	
Hip anterior translation (L) low threshold <i>– aim to improve control of translational movements at the hip</i>	Cognitive motor control retaining of deep ‘cuff muscles of hip’ • psoas major, quadratus femoris and deep hip lateral rotators (Gibbons 2007, pg100; Retchford 2013; Sahrmann 2002) • in lying, sitting, standing and half squat • cognitive activation of hip ‘cuff’ in functional positions • active straight leg raise with translation control	Isometric holds 10 x 10 seconds
Low back/pelvis rotation (L) low threshold <i>aim to regain control of the pelvis into rotation</i>	Cognitive motor control retaining • Direction control exercises: control low/back & pelvis rotation and move hip into flexion & rotation or thoracic spine into rotation (Comerford 2012) • In lying, sitting, standing, half squat, short lunge Activation and retraining of oblique abdominals, gluteus medius, gluteus minimus (Comerford 2018)	Repetitions for 2 minutes progression in functional positions as control improved Muscle activation with body and limb load

Low back/pelvis sidebend (R) low threshold

aim to regain control of the pelvis into sidebend

Cognitive motor control retaining

- Direction control exercises: control low/back & pelvis sidebend and move hip into flexion, abduction (Comerford 2012)
- In lying, sitting, standing, half squat, short lunge

Activation and retraining of oblique abdominals, gluteus medius, gluteus minimus and adductors (Comerford 2018, Sahrman 2002)

Repetitions for 2 minutes
progression in functional positions as control improved

Muscle activation with body and limb load

Hip medial rotation (L) low threshold

aim to control medial rotation of the hip

Cognitive motor control retaining

- Direction control exercises: control hip medial rotation and move hip into flexion, extension and abduction (Comerford 2012, Sahrman 2002)
- In lying, sitting, standing, kneel, half squat, short lunge

- Retraining of gluteus medius (Comerford 2018, Sahrman 2002)

Low back/pelvis extension high threshold <i>aim to control the pelvis moving into anterior tilt</i>	High threshold cognitive retraining with increase load and speed and challenge unstable base • Direction control exercises: control low back / pelvis extension and anterior tilt and move hip into flexion, extension, and thoracic into extension • with speed, load and unstable surface • in sitting, long sitting, standing, prone, incline sitting without support • Retraining of psoas to maintain posterior tilt (Gibbons 2007, pg98)	4 sets 30 seconds each Challenge control of anterior tilt i.e. maintain posterior tilt with hip flexion, with unstable load and perturbation though trunk and arms
Low back/pelvis sidebend (L & R) high threshold <i>aim to control the pelvis into sidebend with load and speed</i>	Challenging direction control work for Low back/pelvis sidebend in sitting, standing with unstable load and perturbation though trunk and arms	
Shoulder blade winging high threshold <i>aim to regain scapular control</i>	High threshold cognitive retraining • Direction control exercises: control shoulder blade winging with arm and thoracic movements weight bearing and non-weight bearing • with speed, load and unstable surface • in sitting, long sitting, standing lean, 4 point kneel • retraining of serratus anterior	At all times optimum scapular orientation Control of site and direction of movement impairment at all times 4 sets 30 seconds each

References

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4. Retchford, T.; Crossley, K.; Grimaldi, A.; Kemp, J.; Cowan, S. Can local muscles augment stability in the hip? A narrative literature review. *J Musculoskelet. Neuronal Interact* 2013, 13, 1e12.
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