Trunk exercise regime on plinth



Figure-1 a-d. Pelvic bridge exercise in supine (left sided stroke). **a, b.** Poor lower trunk control cannot hold the pelvis up and allowing it to sag down during cross legged bridge exercise. **c, d.** Therapist activates the lower trunk abdominals and gluteus muscle to enhance the lower trunk and pelvic stability.



Figure-2 a-d. Upper trunk rotation (left sided stroke). **a, b.** Upper trunk extension-rotation towards most and least affected sides. **c, d.** Upper trunk flexion- rotation bilaterally.



Figure-3 a-f. Lower trunk rotation exercises (left sided stroke). **a-c.** Lower trunk extension-rotation exercise in crook lying position and progressed to cross legged rotation. **d, e.** Lower trunk flexion-rotation with an increased oblique abdominals activity.



Figure-4 a, b. Selective flexion-extension of the lower trunk in sitting (left sided stroke). **a.** Ante-flexion of the lower trunk. **b.** Retro-flexion of the lower trunk.



Figure-5 a, b. Selective lateral flexion of upper and lower trunk in sitting (left sided stroke). **a.** He brings his weak elbow towards plinth by upper trunk side flexion. **b.** Side flexion of lower trunk is difficult to perform as the pelvis is rolled over backwards.



Figure-6 a-c. Weight shift training towards most affected side (right) in cross legged sitting. **a, b.** Therapist activates the lower abdominals and encourage him to actively elongate the lateral flexors of trunk. **c.** With better dynamic stability, active weight shifts towards the most affected side is initiated from lower trunk.



Figure-7 a-d. Trunk initiated reach-outs in sitting position (right sided stroke). With better dynamic stability of lower trunk and pelvis, she could perform reach-outs forward, overhead and diagonal. Forward reach out is performed by forward flexing the trunk at the hips. Lateral reach out is executed by active elongation of the trunk on the weight bearing side and trunk shortening on the non-weight bearing side while reaching sideways at shoulder height.

Trunk exercise regime on Swiss ball



Figure-8 a-f. Pelvic bridge exercise in supine position using a Swiss ball (left sided stroke). **a.** Poor co-activity between lower abdominals and gluteus maximus allows sagging of the pelvis. **b.** While keeping the Swiss ball stable, he was instructed to sway both the anterior superior iliac spines up-down alternatively so as to increase the dynamic coactivity of lower trunk and pelvis i.e. muscular coactivity of oblique abdominals and gluteus maximus. **c, d.** The bridge exercise was further progressed with reduced base of support by arm elevation and unilateral bridge. **e, f.** Improving the lower trunk and pelvis dynamic stability while weight bearing through one leg and moving the Swiss ball medio-laterally with another leg.



Figure-9 a-f. Trunk rotation in supine using Swiss ball (left sided stroke). **a, b.** Upper body is stabilized by keeping both arms abducted. Selective lower trunk extension-rotation by placing the flexed legs on the Swiss ball and then moving the ball either side. **c, d.** While holding the Swiss ball in between the flexed lower extremities, the lower trunk flexion-rotation movement is encouraged by bringing the ball diagonally towards the chest. **e, f.** While keeping the Swiss ball stable with hips and knees flexed to 90^0-90^0 position, the flexion-rotation of upper trunk is guided from lower anterior part of rib cage and shoulder girdle, respectively by the therapist.

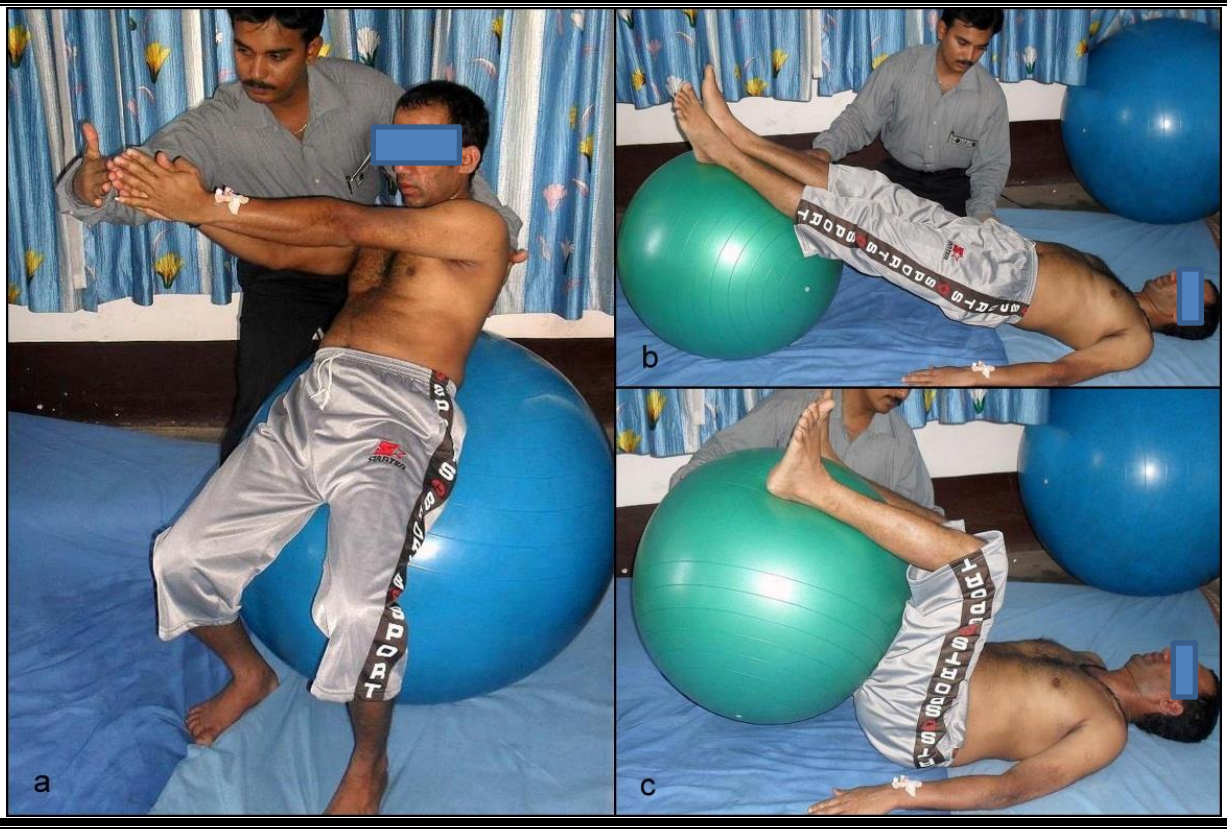


Figure-10 a-c. Progression of the trunk exercises using a Swiss ball (left sided stroke).
a. Flexion-rotation of upper trunk using a large Swiss ball requires greater lower trunk dynamic stability. **b.** Pelvic sway increases the muscular co-activity of lower trunk and pelvis. **c.** Activity of lower abdominals by holding the Swiss ball in between the flexed lower limbs.



Figure-11 a, b. Practicing ante-flexion and retro-flexion of the lower trunk (left sided stroke). Unstable nature of the Swiss ball creates a postural perturbations to the patient over which he had to contract his trunk muscles coactively in order to stabilize the moving ball and prevent from losing balance. Therapist guides the patient's lower trunk into selective flexion and extension in response to the forward and backward movement of the Swiss ball.



Figure-12 a, b. Upper and lower trunk initiated lateral flexion while sitting on a Swiss ball (left sided stroke).
a. Upper trunk initiated lateral flexion by bringing the elbow towards the Swiss ball which demands active elongation of the trunk on the contralateral side.
b. Lower trunk initiated lateral flexion by lifting the pelvis towards the thoracic cage which results an active elongation of the trunk on the weight bearing side.

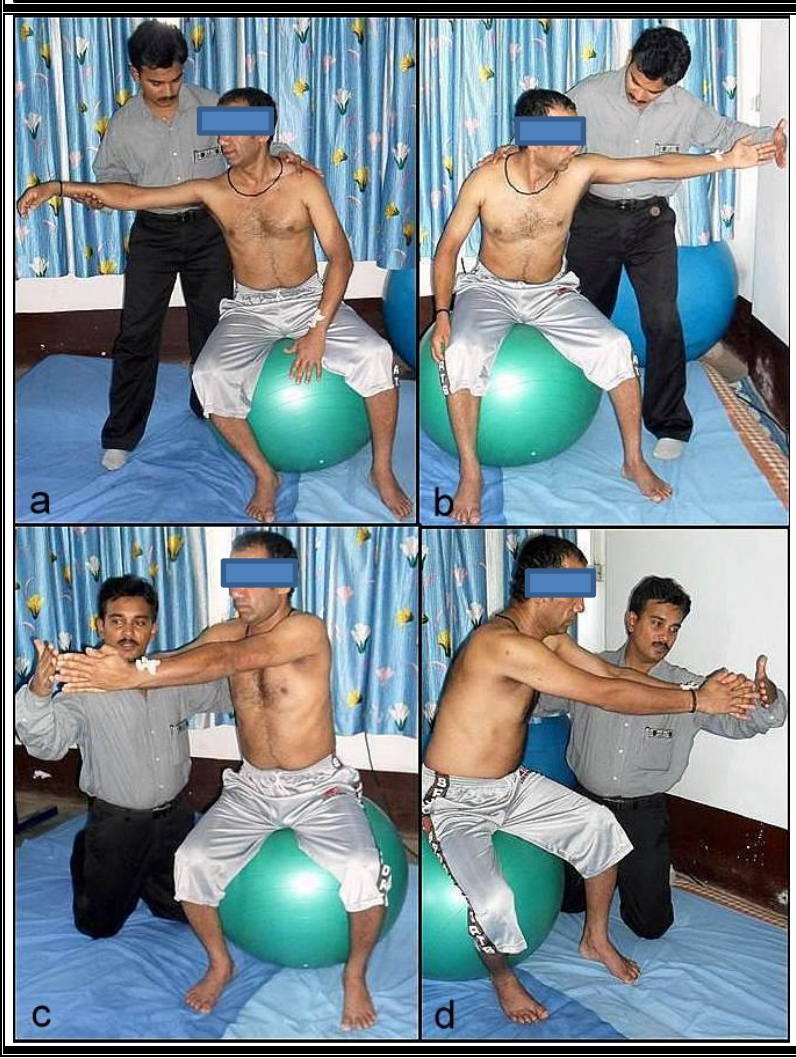


Figure-13 a-d. Reach-outs while sitting on a Swiss ball allow greater postural perturbation to the patient (left sided stroke).
a, b. Lateral reach outs towards most affected side demands active elongation of ipsilateral and shortening of contra-lateral lateral flexors of the trunk.
c, d. Forward and diagonal reach outs at shoulder level initiated from upper body would allow forward inclination of the trunk with anterior pelvic tilt which demands dynamic stability of lower trunk and pelvis.