Table 4: Lateral raise exercise muscle activation levels (% MVC, standard deviation in brackets) average difference between surfaces and number of participants whose change in activity was greater than 5% MVC.

Surface	Muscles studied during lateral raise exercise			
	Rectus Abdominis	External Oblique	Internal Oblique	Erector Spinae
Ball	5.2 (6.2)	3.0 (3.3)	7.8 (7.6)	3.0 (2.0)
Bench	5.3 (8.5)	2.0 (1.9)	6.5 (6.1)	4.0 (4.2)
Difference	-.07 (3.21)	.99 (2)	1.23 (1.97)	-1 (4.26)
Increase	1	1	1	0
Decrease	2	0	0	1

Table 5: Shoulder press exercise muscle activation levels (% MVC, standard deviation in brackets) average difference between surfaces and number of participants whose change in activity was greater than 5% MVC.

Surface	Muscles studied during shoulder press exercise			
	Rectus Abdominis	External Oblique	Internal Oblique	Erector Spinae
Ball	6.01 (6.29)	4.1 (5.4)	21.7 (31.5)	3.7 (3.3)
Bench	6.9 (9.6)	3.5 (3.6)	15.2 (15.2)	13.4 (30.3)
Difference	-.98 (4.29)	.6 (2.59)	6.52 (30.23)	-1.07 (4.62
Increase	0	1	1	0
Decrease	1	0	3	1

Table 6: Triceps extension exercise muscle activation levels (% MVC, standard deviation in brackets) average difference between surfaces and number of participants whose change in activity was greater than 5% MVC.

Surface	Muscles Studied during triceps extension exercise			
	Rectus Abdominis	External Oblique	Internal Oblique	Erector Spinae
Ball	4.3 (3.6)	3.7 (4.3)	13.5 (12.5)	3.4 (3.3)
Bench	9.8 (16.6)	4.3 (4.0)	16.3 (16.5)	3.1 (2.0)
Difference	-5.51 (14.04)	.67 (1.91)	2.76 (5.8)	.31 (3.42)
Increase	0	0	0	1
Decrease	3	1	3	0

increased exercise compliance and enjoyment then the adoption of a Swiss ball appears reasonable but not justified biomechanically. If the aim of a therapist is to rehabilitate or prevent low back injury then sound biomechanically justified or clinically proven rehabilitation protocols should be advocated. Kavcic et al [6] provides biomechanical support for ground based simple exercises (curl up, side bridge, four point kneeling with leg extension) to adequately train the spinal stabilizers while minimizing the compressive/shear penalty and ensuring adequate spinal stability.

This study is limited to the exercises investigated and weights used. For many of the exercises the weight was not near the maximum load the participant could use. The weight levels were chosen based on the rationale that the same low weight is used during "FitBall" classes geared toward a novice exerciser. Challenging each subject with a greater load may influence trunk muscle activity. Future