Exercises	Characteristics	Justification			
Cat/camel	Cycles of flexion and extension in quadruped position.	Cat/camel reduces spinal viscosity (14).			
Abdominal muscle contractions in supine and quadruped. Side bridge	Activation of the deep core musculature in static positions.	The local system consists of mostly type I tonic muscles which are activated with low intensities and slow movements (15). These muscles therefore require exercises that involve little to no motion through the spine and pelvis (16). The side bridge			
Dead bug Bird dog	Maintenance of core control while performing controlled arm and leg movements.	and bird dog exercises produce muscle activation in the absence of external loading to train stabilisation and endurance to the musculature of the torso and hips (17).			
Hip abduction	Activation of the hip musculature while maintaining lumbar and pelvic control.	Hip abduction is an effective non-weight-bearing method isolating function and strength training of the gluteus med muscle (17).			
Abdominal isometric contraction on a Swiss ball.	Maintenance of core control in an unstable environment.	Given that isolation exercises of the local musculature tend to be in non-functional positions, exercise training that shifts to			
Lunges	Maintenance of lumbar control during hip movement.	additional functional positions and actions is required as a progression, which initiates training of the global system (16).			
Directional lunges and oblique twists	Maintenance of lumbar control during multiplanar movements.	Exercises that produce dynamic concentric and eccentric			
Trunk twists on a Swiss ball	Maintenance of core control during movement in an unstable environment.	movement of the spine emphasise the global system musculature while providing an environment for the local system to stabilise the spine in a variety of multiplanar movements (16).			
Trunk twists with theraband on Swiss ball	Progress to movement under resistance in an unstable environment.				

Exercise	Week	Week	Week	Week	Week	Week	Week	Week
	1	2	3	4	5	6	7	8
Warm up Cat/camel Activation of core musculature	sets reps 1 6	sets reps 1 6	sets reps 1 6	sets reps 1 6	sets reps 1 6	sets reps 1 6	sets reps 1 6	sets reps 1 6
- Supine	2 15	2 15	2 15	2 15	2 15	2 15	2 15	2 15
- Quadruped	2 15	2 15	2 15	2 15	2 15	2 15	2 15	2 15
- Side bridge	1 6	1 6 (10s	1 6	1 6	1 6	1 6	1 6	1 6
(on knees)	(10s holds)	holds)	(10s holds)	(10s holds)	(10s holds)	(10s holds)	(10s holds)	(10s holds)
Dead bug Supine position Supported position - knees bent and feet placed on floor Unsupported position - feet raised from floor with knees and hips bent at 90°	Supported position, extend 1 arm and flex opposite knee and hip to 90°	Supported position, extend both arms over head	Supported position, hands clasped, extend arms over head	Supported position, hands clasped, extend arms over head	Unsupported position, hands clasped, extend arms over head, extend 1 leg	Unsupported position, hands clasped, extend arms overhead, extend both legs	Unsupported position, hands clasped, extend arms overhead, extend both legs	Unsupported position, extend opposite arm and opposite leg
Hold time	2s	2s	2s	2s	2s	2s	2s	2s
Duration	30s	45s	60s	60s	75s	90s	90s	105s
<b>Side bridging</b> On side, forearm on floor, elbow under shoulder	Raise hips 3cm off floor with knees bent at 90°	Raise hips 8 cm off floor (max bridging height) with knees bent at 90°	Raise hips 8 cm off floor (max height) with legs straight	Raise hips 8 cm off floor (max height) with legs straight	Raise hips 8 cm off floor (max height) with legs straight and extend 1 leg	Raise hips 8 cm off floor (max height) with legs straight and extend 1 leg, add 0.5kgs to legs	Raise hips 8 cm off floor (max height)with legs straight and extend 1 leg, add 0.5kgs to legs	Raise hips 8 cm off floor (max height) after each side bridge hold, "roll" from one elbow to the other.
Sets	3 each side	3 each side	3 each side	3 each side	3 each side	3 each side	3 each side	3 each side
Duration	30s	45s	20s	30s	30s	20s	30s	60s

In quadruped position (four point kneeling)repeat with other legand opposite legand opposite leg, refrain from placing imbs back on ground between setsand opposite leg, refrain from placing imbs back on ground between setsand opposite leg, add 0.5kg leg, weightand opposite leg, add 0.5kg leg,	Birddog exercises	Raise one leg	Raise						
(four point kneeling) (four point kneeling) time, raising ethen, raising ethen, raising timeleg subleg subleg subleg, add 0.5kg leg weight imsb sakch on ground between setsleg, add 0.5kg leg weightleg, add 0.5kg leg, add 0.5kgleg, add 0.5kgleg, add 0.5kgleg, add 0.5kgleg, add 0.5kg <td></td> <td>at a time,</td> <td>opposite arm</td>		at a time,	opposite arm						
then, raising each arm at a timethen, raising each arm at a timeleg weightleg weight <td></td> <td>· ·</td> <td>••</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>		· ·	••						
each arm at a timeeach arm at a timelimbs back on ground between setslimbs back on 	(four point kneeling)	U U	leg	leg		-			
timetimesumground between setsground between setsground <b< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td>leg weight</td><td>leg weight</td><td>leg weight</td></b<>							leg weight	leg weight	leg weight
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SetsSon each side 20sSon each side 		time			•	U			
Durationlimb 20sside 20sside 30sside 15sside 20sside 20sside 20sside 30sside 30sside 30sHip abduction lung on side, core muscles activated, legs extended.Raise and lower top leg lower top leg 100Raise and lower top leg lower top leg lower top leg lower top leg lower top leg lower top leg lower top leg weightRaise and lower top leg lower top leg lower top leg lower top leg lower top leg weightRaise and lower top leg lower top					between sets	between sets			
Duration20s20s30s15s20s20s30s30s30sHip abduction Lying on side, core muscles activated, legs extended.Raise and lower top leg.Raise and lower top leg. <td>Sets</td> <td>3 on each</td>	Sets	3 on each							
Hip abduction Lying on side, core muscles activated, legs extended.Raise and lower top leg.Raise and lowe		limb	side						
Lying on side, core muscles activated, legs extended.lower top leg.lower top leg.with 0.5kg legwith 1kg legSets2 each side 103 each side 102 each side 153 eac	Duration	20s	20s	30s	15s	20s	20s	30s	30s
Lying on side, core muscles activated, legs extended.2 each side 103 each side 152 each side 153 each side 	Hip abduction	Raise and							
muscles activated, legs extended.Lunges with 2 each side 103 each side 153 each side 15<		lower top leg.	lower top leg	lower top leg	lower top leg				
extended.II<	Lying on side, core						with 0.5kg leg	with 0.5kg leg	with 1kg leg
Sets Reps2 each side 103 each side 102 each side 153 each side 163 each side 163 each side 163 each sid	muscles activated, legs						weight	weight	weight
Reps101015151515151515Stability ball exercisesSeated on stability ball while activating core musculatureSquat with stability ball 90° hip and activating core musculatureSquat with stability ball 90° hip and knee flexionDiagonal curls on stability ballDiagonal curls on stability ballDiagonal curls on stability ballDiagonal curls on stability ballTwists on stability ball with ballTwists on stability ball with here flexionDiagonal curls on stability ballDiagonal curls on stability ballDiagonal curls on stability ballTwists on stability ball with holding a medicine ballTwists on stability ball with herebandTwists on stability ball stability ball on stability ball on stability ball on stability ball polle holding a medicine ballTwists on stability ball stability ball stability ball on stability ball on stability ball holding a medicine ballTwi	extended.								
Stability ball exercisesSeated on stability ball while activating core musculatureSeated on stability ball while activating core musculatureSquat with stability ball stability ball 90° hip and knee flexionDiagonal curls on stability ballDiagonal curls on stability ballTwists on stability ball with therabandSets3 Duration 30s3 Duration 30s3 Duration 30s3 Puration	Sets	2 each side	3 each side	2 each side	3 each side	3 each side	2 each side	3 each side	3 each side
Stability ball while activating core musculaturestability ball while activating core musculaturestability ball stability ball stability ball stability ball stability ball shee flexionstability ball stability ball shee flexionon stability ballstabi	Reps	10	10	15	15	15	15	15	15
while activating core musculaturewhile activating core musculature90° hip and knee flexion90° hip and knee flexionballballholding a medicine ballwith therabandSets3 Duration 30s3 Duration 30s3 Pers 153 Reps 153 Reps 153 Reps 163 Reps 103 Reps 103 Reps 10Lunges/obliquesLunges with 2kg weight in each handLunges at 45° Reps 10Lunges to sidesSolides with 2kg weight in each handLunges at 45° activationLunges to sidesSolides with 2kg weight in each handSolidesSolidesSolidesSolidesSets3333333333	Stability ball exercises	Seated on	Seated on	Squat with	Squat with	Diagonal curls	Diagonal curls	Twists on	Twists on
activating core musculatureactivating core musculatureknee flexionknee flexi		stability ball	stability ball	stability ball	stability ball	on stability	on stability	stability ball	stability ball
Core musculature		while	while	90° hip and	90° hip and	ball	ball	holding a	with
Core musculature		activating	activating	knee flexion	knee flexion			medicine ball	theraband
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each handeach handweight in each handweight in each handweights in each handwith therabandwith therabandSets3333333	Lunges/obliques	Lunges with	Lunges with	Lunges at 45°	Lunges at 45°	Lunges to	Lunges to	Oblique	Oblique
Sets33333344<		2kg weight in	2kg weight in		with a 2kg	sides	sides with 2kg	pulley twist	pulley twist
Sets 3 3 3 3 3 3 3 3 3 3		each hand	each hand		weight in		weights in	with	with
					each hand		each hand	theraband	theraband
	Sets	3	3	3	3	3	3	3	3
	Reps							10	

(1, 14-20)