

**THE ROYAL MILITARY
COLLEGE DUNTROON
INDIVIDUAL
FUNCTIONAL
CONDITIONING**



STANDARD OPERATING PROCEDURES FOR USE OF THE ROYAL MILITARY COLLEGE INDIVIDUAL FUNCTIONAL CONDITIONING

General

1. The Royal Military College Individual Functional Conditioning (IFCT) can be described as a training system used to conduct an array of movement patterns that replicate movements most people perform on a daily basis.
2. The musculoskeletal system provides the framework from which movement occurs. The nervous system coordinates the movement by selecting, recruiting and controlling the muscles which are acting on the bone, with the metabolic system providing the energy for movement. Functional exercise involves multiple planes and multiple joints. Most human action (work) seems to involve a relatively limited number of fundamental movements such as lifting, pushing, pulling, throwing and locomotion.
3. Excessive use of specific movement patterns with lack of conditioning across others, as is common in many circuit classes using 'traditional' resistance exercise, has the potential to increase injury through muscle imbalances and overloading the overused structures. Over use of push ups, sit ups and running create tight hip flexors which leads to hip girdle instability and potentially increases compression and shear force loading that would again be accentuated by increases in load when pack marching. Therefore, functional exercise movement patterns assist in the prevention of overuse injuries and complement additional specific activities required for combat and soldierly function.
4. Ensure when conditioning the body in a functional state to use this circuit in a **day on / day off** fashion. If attending a group IFCT class that does not train all body movement patterns just add those exercises that were not performed at the end of the workout to achieve an overall balancing of the body.

Conduct

5. The IFCT should be conducted in the sequence which is designated on the corresponding matrix. There are two matrixes one for ICT and one for use with in RMC.

Safety

6. For safety reasons, the techniques that are clearly stated in the following paragraphs are the only methods that are to be employed when negotiating physical activities.

Tables

7. **Table 1** denotes the Functional Matrix for ICT Training at MTA.
Table 2 denotes the Functional Matrix for use within RMC.

FUNC CCT 1	STN	BODY PATTERN	UP LVL	LO LVL	LOAD
ARM	1	PUSH	0	-1	15
SHOULDER	2	PULL	0	-1	15
TRUNK	3	LOWER TRUNK	0	-1	15
LEG	4	LIFT	0	-1	30sec
TRUNK	5	UPPER TRUNK	0	-1	15
TRUNK	6	ROTATION	0	-1	16
LEG	7	SQUAT	0	-1	15
LEG	8	LUNGE	0	-1	16

FUNC CCT 2	STN	BODY PATTERN	UP LVL	LO LVL	LOAD
ARM	1	PUSH	0	-1	20
SHOULDER	2	PULL	0	-1	20
TRUNK	3	LOWER TRUNK	0	-1	20
LEG	4	LIFT	0	-1	45sec
TRUNK	5	UPPER TRUNK	0	-1	20
TRUNK	6	ROTATION	0	-1	20
LEG	7	SQUAT	0	-1	20
LEG	8	LUNGE	0	-1	20

FUNC CCT 3	STN	BODY PATTERN	UP LVL	LO LVL	LOAD
ARM	1	PUSH	0	-1	25
SHOULDER	2	PULL	0	-1	25
TRUNK	3	LOWER TRUNK	0	-1	25
LEG	4	LIFT	0	-1	60sec
TRUNK	5	UPPER TRUNK	0	-1	25
TRUNK	6	ROTATION	0	-1	26
LEG	7	SQUAT	0	-1	25
LEG	8	LUNGE	0	-1	26

FUNC CCT 4	STN	BODY PATTERN	UP LVL	LO LVL	LOAD
ARM	1	PUSH	1	-1	25
SHOULDER	2	PULL	1	-1	15
TRUNK	3	LOWER TRUNK	0	-1	25
LEG	4	DEADLIFT STICK	1	-1	25
TRUNK	5	UPPER TRUNK	0	-1	25
TRUNK	6	ROTATION	0	-1	26
LEG	7	SQUAT	0	-1	25
LEG	8	LUNGE	0	-1	26

FUNC CCT 5	STN	BODY PATTERN	UP LVL	LO LVL	LOAD
ARM	1	PUSH	1	-1	25
SHOULDER	2	PULL	1	-1	15
TRUNK	3	LOWER TRUNK	0	-1	25
LEG	4	LIFT 20-40%BW	1	-1	25
TRUNK	5	UPPER TRUNK	0	-1	25
TRUNK	6	ROTATION	0	-1	26
LEG	7	SQUAT	0	-1	25
LEG	8	LUNGE	0	-1	26

FUNC CCT 6	STN	BODY PATTERN	UP LVL	LO LVL	LOAD
ARM	1	PUSH	2	-1	25
SHOULDER	2	PULL	2	-1	10
TRUNK	3	LOWER TRUNK	1	-1	25
LEG	4	LIFT 20-30% BW	1	-1	25
TRUNK	5	UPPER TRUNK	0	-1	25
TRUNK	6	ROTATION	0	-1	26
LEG	7	SQUAT 10% BW	1	-1	25
LEG	8	LUNGE	1	-1	26

FUNC CCT 7	STN	BODY PATTERN	UP LVL	LO LVL	LOAD
ARM	1	PUSH	2	-1	25
SHOULDER	2	PULL	2	-1	10
TRUNK	3	LOWER TRUNK	1	-1	25
LEG	4	LIFT 20-40%BW	1	-1	25
TRUNK	5	UPPER TRUNK	0	-1	25
TRUNK	6	ROTATION	0	-1	26
LEG	7	SQUAT 10-15% BW	1	-1	25
LEG	8	LUNGE	1	-1	26

FUNC CCT 8	STN	BODY PATTERN	UP LVL	LO LVL	LOAD
ARM	1	PUSH	3	-1	15
SHOULDER	2	PULL	3	-1	10
TRUNK	3	LOWER TRUNK	2	-1	10
LEG	4	LIFT 50% BW	1	-1	25
TRUNK	5	UPPER TRUNK	0	-1	25
TRUNK	6	ROTATION	0	-1	26
LEG	7	SQUAT 20% BW	1	-1	25
LEG	8	LUNGE	1	-1	26

FUNC CCT 9	STN	BODY PATTERN	UP LVL	LO LVL	LOAD
ARM	1	PUSH	3	-1	15
SHOULDER	2	PULL	3	-1	10
TRUNK	3	LOWER TRUNK	2	-1	15
LEG	4	LIFT 50% BW	1	-1	25
TRUNK	5	UPPER TRUNK	1	-1	15
TRUNK	6	ROTATION	1	-1	16
LEG	7	SQUAT 25% BW	1	-1	25
LEG	8	LUNGE	2	-1	26

FUNC CCT 10	STN	BODY PATTERN	UP LVL	LO LVL	LOAD
ARM	1	PUSH	3	-1	20
SHOULDER	2	PULL	3	-1	10
TRUNK	3	LOWER TRUNK	2	-1	15
LEG	4	LIFT 50% BW	1	-1	25
TRUNK	5	UPPER TRUNK	1	-1	15
TRUNK	6	ROTATION	1	-1	16
LEG	7	SQUAT 25% BW	1	-1	25
LEG	8	LUNGE	2	-1	26

Table 1 Functional Matrix for ICT Training MTA

BODY MOVEMENT PATTERN	UPPER BODY HORIZONTAL PUSH	UPPER BODY PULL	SQUAT	LUNGE	LOWER BODY BEND	TRUNK LOWER FLEXION	TRUNK UPPER FLEXION	TRUNK ROTATION
LEVEL 0	PUSH UP WITH STICK	LYING PULL	BODY SQUAT	STATIC LUNGE	STATIC HOLD WITH STICK	REVERSE CRUNCH	BFA SIT UP	UPPER BODY TWIST
LEVEL 1	PUSH UP ARM EXT	ASSISTED HEAVE	WEIGHTED FRONT SQUAT	STEP LUNGE	POLE DEADLIFT	V SIT	ELBOW TO KNEE SIT UP	LOWER BODY TWIST
LEVEL 2	PUSH UP A/L EXT	JUMP HEAVES	WEIGHTED BACK SQUAT	WALK LUNGE	WEIGHTED DEADLIFT	MED BALL REVERSE CRUNCH	ARMPIT TO KNEE SIT UP	LEVEL 1 UPP/LOW BODY TWIST
LEVEL 3	DECLINE PUSH UP	UNDER GRASP HEAVES	BULGARIAN SPLIT SQUAT	DIRECTIONAL LUNGE	ROMANIAN DEADLIFT	SINGLE SUPINE LEG RAISE	WEIGHTED SIT UP	LOWER BODY TWIST LEVEL 2

Table 2 Functional Matrix for RMC

LEVEL 0

Upper Body Horizontal Push



Push Up With Stick (Level 0)

- (1) Three points of contact: head, middle of the shoulder blades and centre of gluteus.
- (2) High hips so that the upper body is parallel to the ground.
- (3) Feet no wider than 30 cm apart.

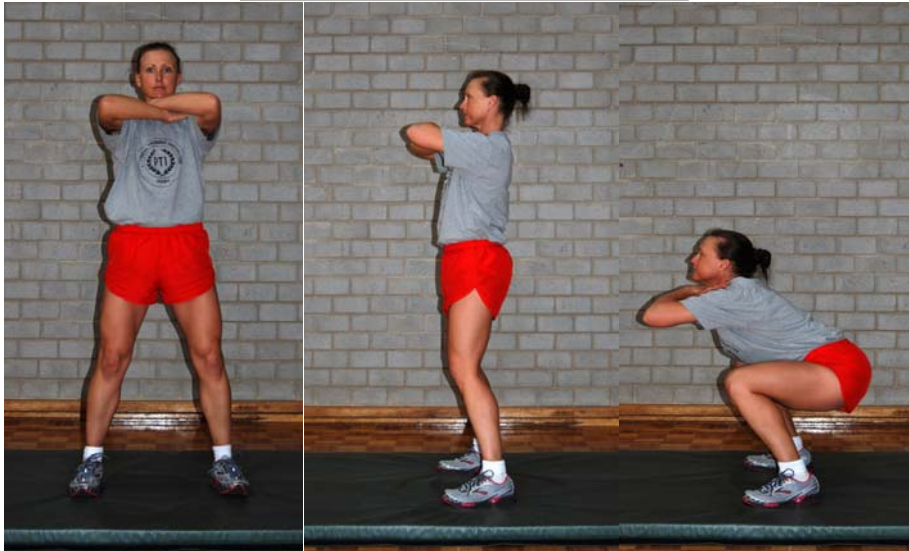
Upper Body Pull



Lying Pull Up (Level 0)

- (1) Feet placed under knees at 90 degree angle.
- (2) Hands shoulder width apart.
- (3) High hips with upper body parallel to the ground.
- (4) Heaving up till chest touches beam.

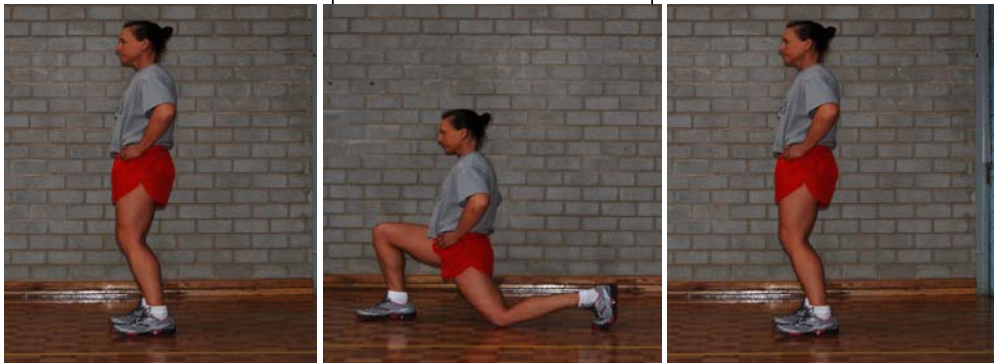
Squat



Body Squat (Level 0)

- (1) Feet shoulder width apart.
- (2) Feet splayed on a 30 degree angle.
- (3) Heels grounded.
- (4) Hands placed on shoulders elbows held high.
- (5) Break at the hips descending as deep as possible.
- (6) Correct tracking of the knees (i.e. not excessively over toes).

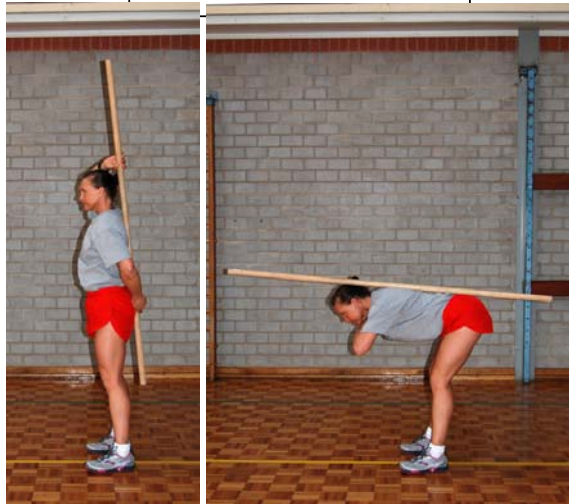
Lunge



Static Lunge (Level 0)

- (1) Step forward with the master leg and descend to a 90 degree angle in the hip and knee.
- (2) The rear knee touches the ground ensuring the upper body remains perpendicular with the shoulders in-line with the hips.
- (3) Drive up to the start position and repeat on the same leg.

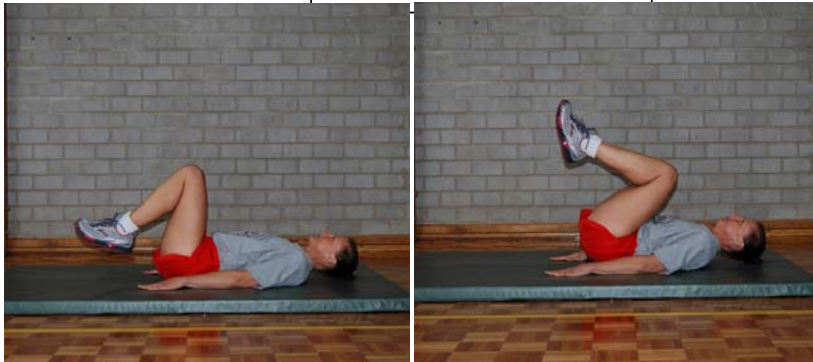
Lower Body Bend



Static Hold with Stick (Level 0)

- (1) Break at the hips and posteriorly tilt the pelvis (i.e. tuck hips forward).
- (2) Three points of contact: head, middle of the shoulder blades and centre of gluteus.
- (3) Feet shoulder width apart with knees slightly bent.

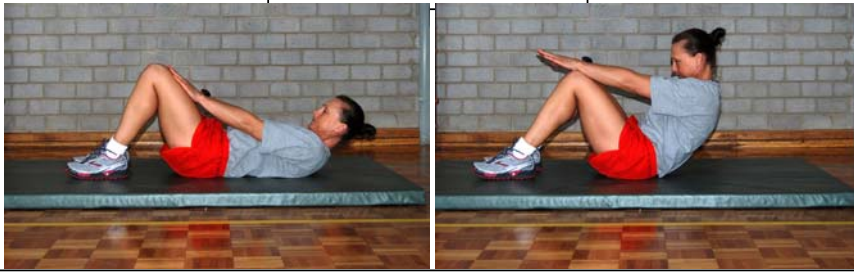
Trunk Lower Flexion



Reverse Crunch (Level 0)

- (1) Head on floor and palms face down on the mat.
- (2) Feet hang as close to the gluteus as possible with hips bent at 90 degrees.
- (3) Draw the knees up to chest so the lumbar spine just raises off the floor
- (4) Shoulders remain on the floor throughout the entire ROM

Trunk Upper Flexion



BFA Sit up (Level 0)

- (1) Legs bent approx 90 degrees.
- (2) Arms at full extension, palms face down on thighs with fingers held together.
- (3) Rising up until the wrist just passes knees, ensuring chin is placed on the upper chest.
- (4) Lowering down under control.

Trunk Rotation

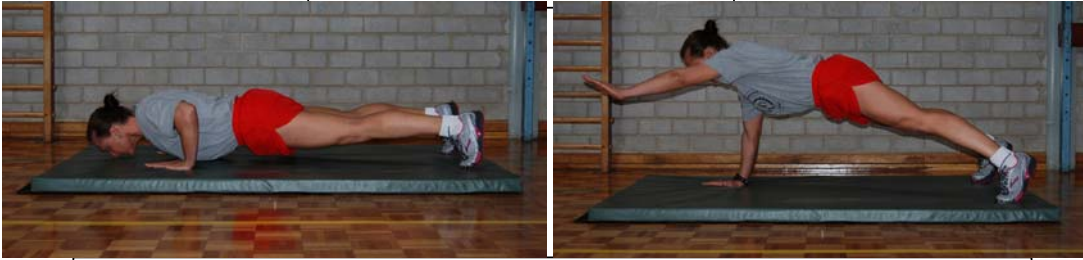


Upper Body Twist (Level 0)

- (1) Lying in the supine position (i.e. on the back).
- (2) Arms at full extension with 90 degree hip and knee flexion.
- (3) Rotate arms side to side.
- (4) Head and eyes following in the directions of the hands.

LEVEL 1

Upper Body Horizontal Push



Push up Arm Extension (Level 1)

- (1) Straight line shoulder through to heels.
- (2) Feet splayed wide for a stable platform.
- (3) Raising arms alternately with no rotation through the hips

Upper Body Pull



Assisted Heave (Level 1)

- (1) Hands shoulder width apart, full extension of the arms.
- (2) Over grasp grip on beam.
- (3) Knee bent at 90 degrees.
- (4) Heaving up till chest touches the beam or chin over the beam.
- (5) Lower down full extension of the arms.
- (6) Spotter has outside hand in the small of the back and inside hand supporting the inside knee.

Squat



Weighted Front Squat (Level 1)

- (1) Feet shoulder width apart.
- (2) Feet splayed on a 30 degree angle, heels grounded.
- (3) Bar placed high on the anterior deltoid and in contact with neck, elbows held high to keep bar in place.
- (4) Break at the hips descending as deep as possible.
- (5) Correct tracking of the knees (i.e. not excessively over toes).

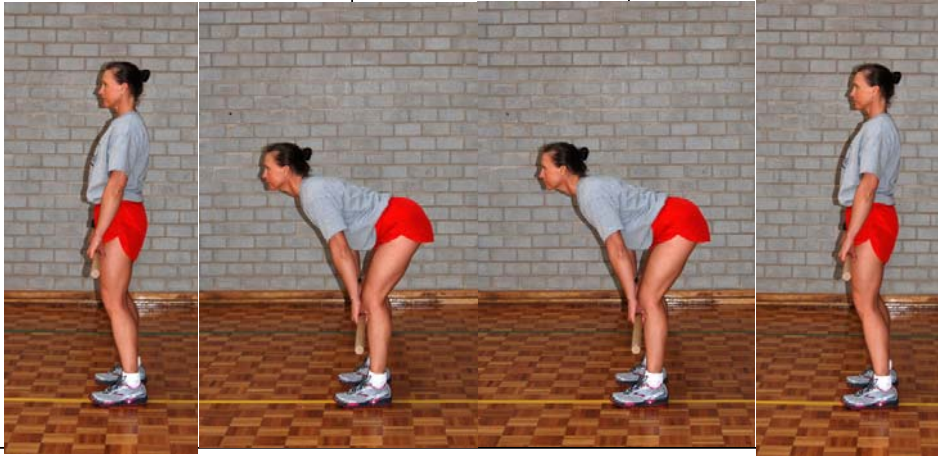
Lunge



Step Lunge (Level 1)

- (1) Step forward with the master leg and descend to a 90 degree angle in the hip and knee.
- (2) The rear knee touches the ground ensuring the upper body remains perpendicular with the shoulders in-line with the hips.
- (3) Drive up to the start position and alternate legs.

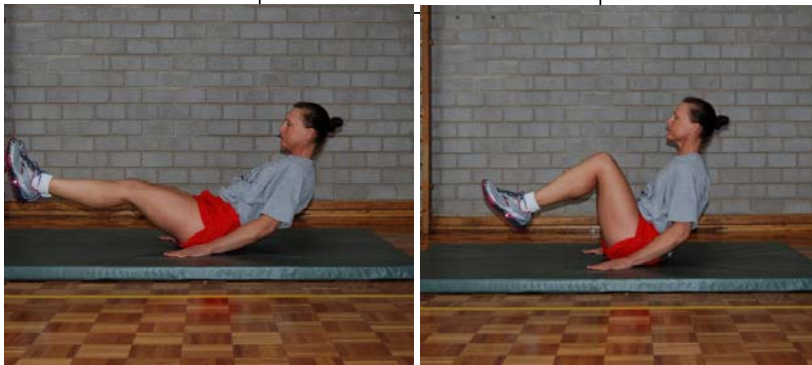
Lower Body Bend



Pole Dead lift (Level 1)

- (1) Feet shoulder width apart.
 - (2) Knees slightly bent with head in a neutral position.
 - (3) Break at the hips so that the pole lowers to the distal portion of the knee.
 - (4) Use main muscle groups in legs drive upwards.
- Keeping hips low and chest up.

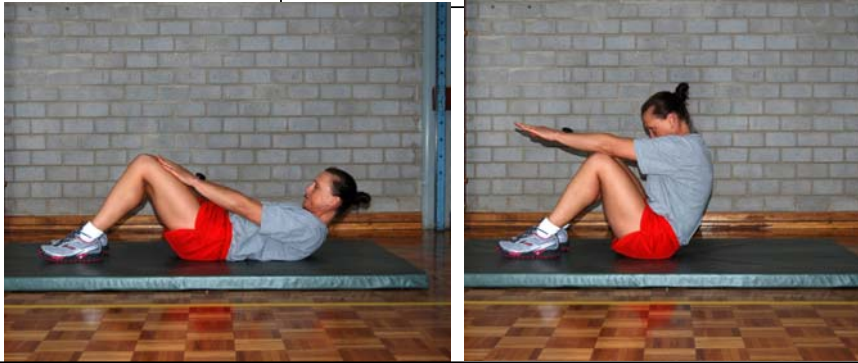
Trunk Lower Flexion



V - Sit (Level 1)

- (1) Hands palm down on the mat and next to the hips.
 - (2) Legs parallel to the ground with the feet off the floor and knees slightly bent.
 - (3) Upper body is at a 45 degree angle.
- Draw knees and chest towards each other and lower down under control.

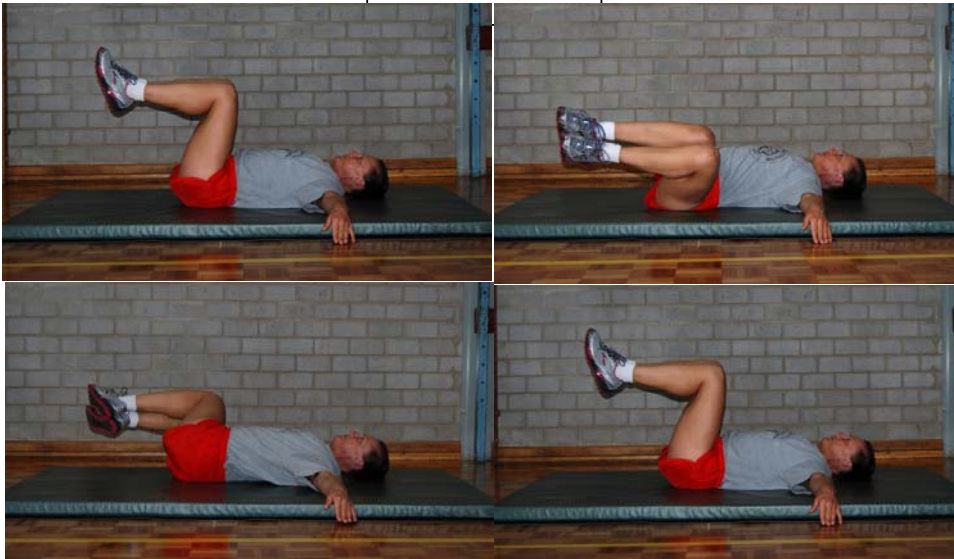
Trunk Upper Flexion



Elbow To Knee Sit up (Level 1)

- (1) Legs bent approx 90 degrees.
 - (2) Arms at full extension, palms face down on the thighs with the fingers held together.
 - (3) Rising up until elbow reaches knees ensuring the chin is placed on the upper chest
- Lowering down under control

Trunk Rotation



Lower Body Twist (Level 1)

- (1) Arms placed out to side, palms facing down.
- (2) Head on the mat.
- (3) Hips and knees bent at 90 degrees.
- (4) Rotating legs to alternate sides.
- (5) Head and shoulders stay in contact with the floor.

LEVEL 2

Upper Body Horizontal Push



Push up Arm/Leg Extension (Level 2)

- (1) Straight line shoulder through to heels.
- (2) Feet splayed wide for a stable platform.
- (3) Collateral arm and leg raise with no rotation through the hips.

Upper Body Pull



Jump (Rope/ Beam) Heaves (Level 2)

- (1) Hands shoulder width apart, full extension of the arms.
- (2) In an explosive movement jump up until your chin or chest touches the beam (or your chin is in line with the top hand if using the rope with the rope to the outside of the body).
- (3) Over grasp grip on beam.
- (4) Lower down full extension of the arms.

Squat



Weighted Back Squat (Level 2)

- (1) Feet shoulder width apart.
 - (2) Feet splayed on a 30 degree angle.
 - (3) Heels grounded.
 - (4) Place bar behind your neck, resting on the trapezium.
 - (5) Break at the hips descending as deep as possible.
- Correct tracking of the knees (i.e. not excessively over toes).

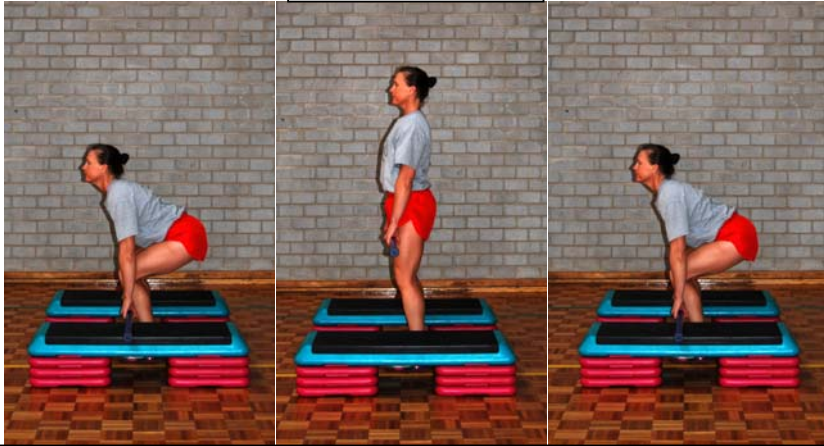
Lunge



Walk Lunge (Level 2)

- (1) Step forward with the master leg and descend to a 90 degree angle in the hip and knee.
- (2) The rear knee touches the ground ensuring the upper body remains perpendicular with the shoulders in-line with the hips.
- (3) Step forward and repeat opposite leg.

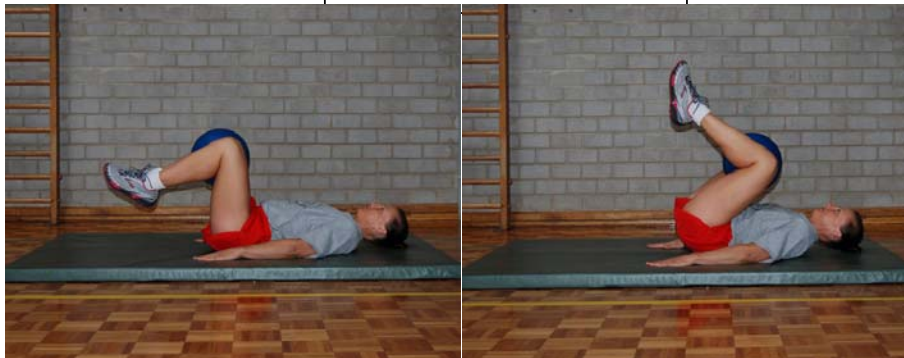
Lower Body Bend



Weighted Dead lift (Level 2)

- (1) Feet shoulder width apart.
 - (2) Knees slightly bent with head in a neutral position.
 - (3) Break at the hips and keep upper body at approx 45 degrees.
 - (4) Use main muscle groups in legs drive upwards.
- Keeping hips low and chest up.

Trunk Lower Flexion



Medicine Ball Reverse Crunch (Level 2)

- (1) Head on floor and palms face down on the mat.
- (2) Medicine ball secured between knees.
- (3) Draw the knees up to chest, shoulders remain on the floor.

Trunk Upper Flexion



Armpit To Knee Sit up (Level 2)

- (1) Legs bent approx 90 degrees.
- (2) Arms at full extension, palms face down on the thighs with the fingers held together.
- (3) Rising up until the armpit reaches the knees ensuring the chin is placed on the upper chest.
- (4) Lowering down under control.

Trunk Rotation



Upper/Lower Body Twist (Level 2)

- (1) Lying in the supine position (i.e. on the back).
- (2) Head on the mat.
- (3) Rotating legs and arms in alternate directions, ensuring to pause when moving through the start position.

LEVEL 3

UPPER BODY HORIZONTAL PUSH



Decline Push up (Level 3)

- (1) Straight line shoulder through to heels.
- (2) Posterior pelvic tilt (i.e. tuck hips) IOT minimise excessive lordotic curve.
- (3) Feet placed on bench.
- (4) Lower down till arms are parallel to the ground.
- (5) Rising up full extension of the arms.

Upper Body Pull



Under Grasp Heaves (Level 3)

- (1) Hands shoulder width apart, full extension of the arms.
- (2) Under grasp grip on beam.
- (3) Heaving up till chest touches the beam or chin over the beam.
- (4) Lowering down full extension of the arms.

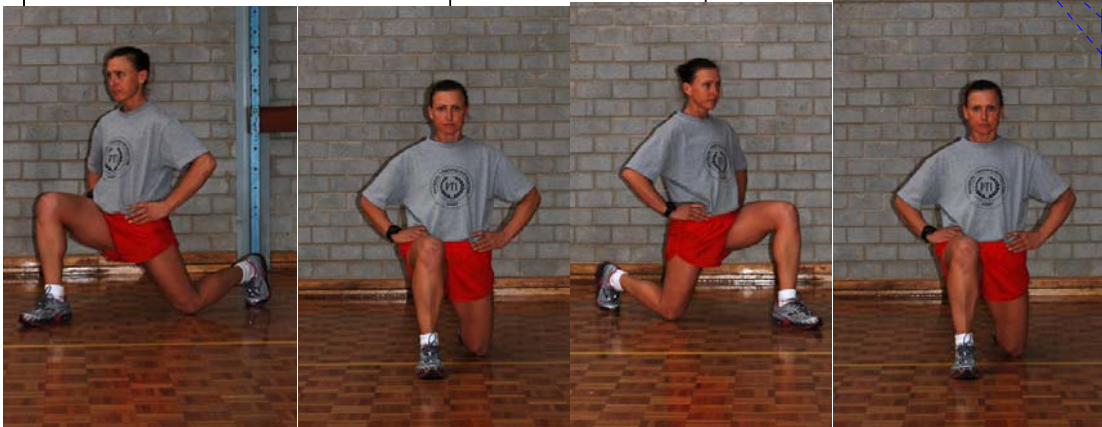
Squat



Bulgarian Split Squat (Level 3)

- (1) One foot well out in front of the other in a lunge position, rear foot firmly on top of bench.
 - (2) Descend with the front hip and knee bent at 90 degrees.
 - (3) Drive upward.
- Upper body perpendicular with shoulders in-line with the hips.

Lunge



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Directional Lunge (Level 3)

- (1) Step one foot forward landing with heel first.
- (2) Descending until knee touches the ground and immediately drive upward back to start position.
- (3) Following the direction of 12 clock, 2 clock and 10 clock
- (4) Step one foot rearward landing with toes.
- (5) Descending until knee touches the ground and immediately drive upward back to start position.
- (6) Following the direction of 6 clock
- (7) Repeat on opposing leg.

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Lower Body Bend



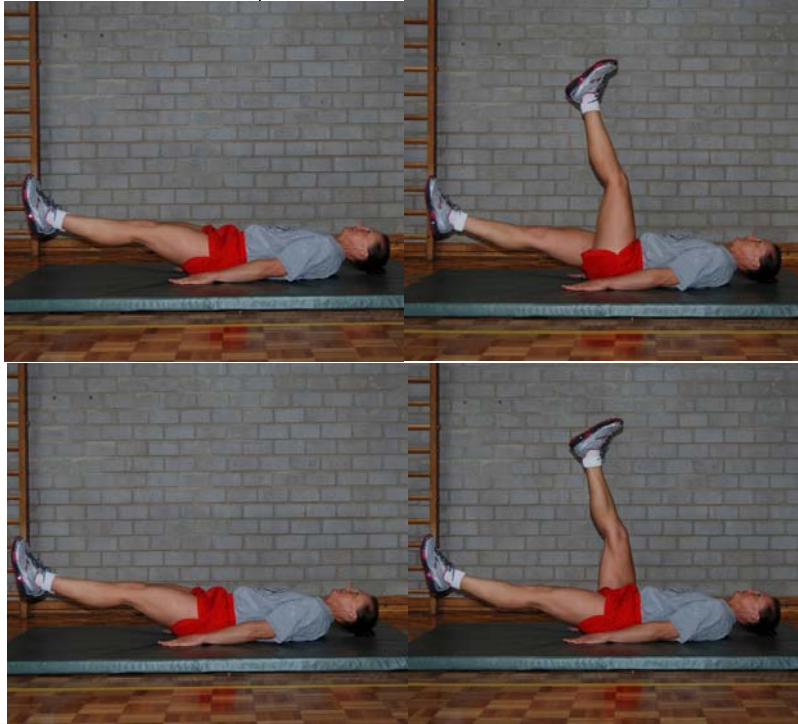
Romanian Dead lift (Level 3)

Feet shoulder width apart.

- (1) Knees slightly bent with head in a neutral position.
- (2) Hold a bar against thighs with a overhand grip.
- (3) Break at the hips until the bar is lowered to the distal portion of the knee initiating tension in the hamstrings.

Return to the start position.

Trunk Lower Flexion



Single Supine Leg Raise (Level 3)

- (1) Head on floor and palms face down on the mat.
- (2) Legs held off the floor and parallel with knees slightly bent.
- (3) Raise one leg at a time to a 90 degree hip angle and lower under control, legs change.

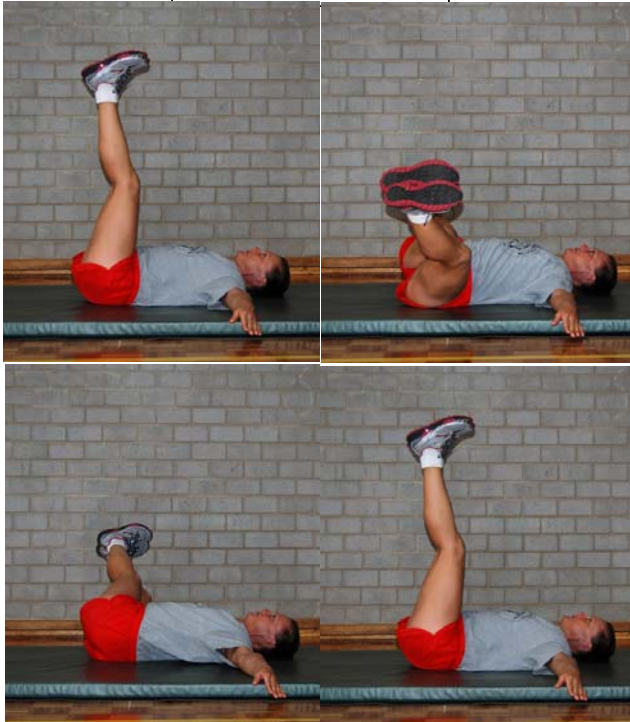
Trunk Upper Flexion



Weighted Sit up (Level 3)

- (1) Legs at 90 degrees.
- (2) Arms at full extension.
- (3) Medicine ball held out to front on a 45 degree angle.
- (4) Raising up with the medicine ball held in the same position.
- (5) Lowering down under control.

Trunk Rotation



Lower Body Twist (Level 3)

- (1) Arms placed out to side, palms facing down.
- (2) Head on the mat.
- (3) Rotating legs to alternate sides.
- (4) Head and shoulders stay in contact with the floor.

