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UNDERGROUND STRENGTH-
TRAINING

Providing coaches, referees, players, and administrators with the knowledge, skills, and leadership abilities to ensure that safety and best practice principles are incorporated into all aspects of contact rugby.



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“UNDERGROUND” STRENGTH AND CONDITIONING FOR RUGBY

Dr Mike Posthumus, PhD

UCT/MRC Research Unit for Exercise Science and Sports Medicine
Department of Human Biology, University of Cape Town
Sport Science Institute of South Africa
Boundary Road, Newlands 7700
South Africa

CONTACT DETAILS:

Tel.: +27 (21) 650 4572

Fax: +27 (21) 650 7530

Email: michael.posthumus@uct.ac.za

Dr Mike Posthumus is a research fellow at the UCT/MRC Research Unit for Exercise Science and Sports Medicine, the Department of Human Biology, Faculty of Health Sciences, University of Cape Town, South Africa.

INTRODUCTION:

Rugby is a multifaceted sport, which demands several physical and physiological capacities for optimal performance. Factors such as strength, power, speed, agility, fitness and body size are all extremely important performance measures⁽⁴⁾. Scientific literature has documented a significant increased trend in the speed and size of elite rugby players^(7,8). Physical conditioning, including strength training and fitness conditioning, is thus becoming increasingly important in the modern game. Moreover, the benefits of physical conditioning are not limited to performance; the incidence of musculoskeletal injuries may also be reduced with the implementation of a carefully planned conditioning programme^(5,6).

Rugby players of all levels, not merely senior players, should be encouraged to participate in strength training^(2,5). Common folklore has made the general public believe that resistance training will stunt growth if performed at a young age; this is totally unfounded. Properly designed and supervised resistance training programmes implementing safe technique is encouraged and endorsed by numerous medical, health and professional bodies⁽⁵⁾. Resistance training has been shown to be the key in prevention of injury in youth and adolescent athletes. Thus, implementation of properly designed resistance training programmes will not only give youth and senior rugby players a competitive advantage throughout their rugby careers, but also reduce injuries.

A previous BokSmart document (<http://www.sarugby.co.za/boksmart/pdf/BokSmart%20-%20Physical%20conditioning%20for%20rugby.pdf>) outlined a detailed and specific periodised physical conditioning programme. This programme included exercise plans and descriptions for all levels of participation and experience. This previous programme was however predominantly gymnasium (gym) based and therefore not useful to players without access to a gym. Although certain alternatives were included for individuals without access to a gymnasium, we would like to provide coaches, players, referees and parents with the information and tools to optimise physical conditioning without the use of conventional gym equipment. This form of training is often referred to as “underground” strength training, and if used correctly may be a very valuable tool for those who do not have access to a gym. This form of training also provides the possibility for coaches to incorporate strength conditioning into their on-field training sessions.

“UNDERGROUND” RESISTANCE TRAINING PROGRAMMES:

This “underground” strength conditioning programme follows the same on line evidence-based guidelines used to create the previous BokSmart gym-based conditioning programme. The rugby year is therefore sub-divided into 4 mesocycles (periods/phases): an off-season phase, a pre-season phase, an in-season phase, and a transition (rest) phase (Table 1). The primary aims and objectives of each mesocycle remains exactly the same^(1,3). The off-season, which is distinguished by not having the constraints of structured team training sessions, is the perfect period to increase muscle mass (hypertrophy).

In order to achieve the desired muscle hypertrophy, high-volume training with a relatively high-intensity (weight) is used^(3,6). During the pre-season phase, the period during which the team is preparing on the field for the forthcoming season, one should shift toward more match-specific strength conditioning. There should be an increase in the intensity (weight) and a decrease in the volume of strength conditioning. This phase should also incorporate velocity (power) training^(3,6). Strength training during the in-season period remains critically important. The primary objective during this phase is to maintain the level of conditioning achieved during the off- and pre-season phases⁽¹⁾. A combination of very high intensity work, as well as power training should be implemented during the in-season phase⁽¹⁾. The transition phase of the training year is a period of active rest. During this phase the body must be rested, and if possible, a proficient medical professional should assess all injuries⁽¹⁰⁾. If required, rehabilitation programmes should be prescribed by a medical professional to ensure optimal recovery and prevention of recurrent injuries during the following (upcoming) season.

THE PERIODS OF THE RUGBY TRAINING YEAR:

The Conditioning programmes are divided into 4 phases, as defined below:

1. Off-season: defined as the period after the transition phase of the previous season and before the pre-season structured team training sessions commence. This phase should last approximately 12 weeks.
2. Pre-season: defined as the period between the first pre-season structured team training session and the first league match. Each team’s schedule will be different; however, this phase is also ideally performed for a duration of 12 weeks.
3. In-season: defined as the duration of the season, i.e. the period between the first and last league match.
4. Transition period/active rest period: Defined as the 2-4 weeks after the in-season period. No conditioning programmes have been prescribed during this phase, as players should give their bodies a break during this period. Players may stay active by participating in non sport-specific recreational activities performed at low volume and intensity, but no structured training is necessary. Where necessary, players should follow a rehabilitation programme, to ensure recovery of injury between seasons.

“UNDERGROUND” RESISTANCE TRAINING GUIDELINES:

“Underground” resistance training sessions are prescribed for the length of the off-, pre- and in-season periods. Each specific workout is defined in the *SPECIFIC WORKOUT PROGRAMMES*, and each exercise mentioned is described within the *EXERCISE DESCRIPTION SECTION*.

“UNDERGROUND” RESISTANCE TRAINING YOUTH/SENIOR CATEGORIES AND PROGRESSION:

The programme design for this “Underground” strength training programme is limited due to the natural constraints in exercise variation and weight (resistance) selection when compared to gym-based programmes. Therefore only two programmes are prescribed: youth and senior.

The Youth programme is designed for players between 13 and 16 years of age (more specifically U14-U16). The senior programme is designed for rugby players 16 years and older (more specifically, U18 and above).

The youth programme includes an advanced progression for players that have completed 8 weeks of the standard programme. Senior players may progress certain exercises through selecting the suggested progression hints that are described in the *EXERCISE DESCRIPTION SECTION*.

EQUIPMENT REQUIREMENTS AND RESISTANCE SELECTION:

The “underground” resistance training programmes are specifically designed to enable players to build muscle mass and strength without the use of a gymnasium. Therefore, various items such as sand bags, rock, bricks, concrete bricks, vibracrete pillars, water containers, ropes and sleds are utilised (Figure 1). It is recommended that players prepare various sets of sandbags with differing amounts of sand in each set, and source various sized rocks. The amount of water in the water containers may also be changed for each exercise. This will enable better resistance selection for exercises. Exercises in each *SPECIFIC WORKOUT PROGRAMMES* section prescribes the ideal number of repetitions to be performed. Unless a different instruction is given, a resistance that enables the minimum number of repetitions to be performed with correct technique, but not much more, should be selected. Repetitions should be performed until the weight can no longer be lifted with correct technique. However, if you find yourself performing 2 repetitions more than prescribed in two consecutive sets, attempt to increase the load (weight) of the object you are lifting.

Power exercises are examples where players will be instructed to not perform the exercise to fatigue (failure). Power exercises will be indicated in the *SPECIFIC WORKOUT PROGRAMMES* section with the letter P. These exercises should be performed with roughly 40-60% of the maximal weight that can be lifted in that specific movement. The focus of these exercises is speed and acceleration, therefore only the prescribed number of repetitions should be performed, and not any more.

FITNESS CONDITIONING:

Fitness conditioning sessions have been prescribed for players to follow to prepare themselves for the pre-season period. Depending on individual needs, players may choose to do less or more. Players needing to gain weight should cut one fitness conditioning session a week and players wanting to lose weight should perform an extra fitness conditioning session. Furthermore, the previous BokSmart gym-based Strength and Conditioning document included various additional fitness conditioning drills for players and coaches to use; these drills include several fitness conditioning drills to be included during team training sessions. The previous document should therefore be referred to for additional fitness conditioning drills.

NECK AND OTHER PREVENTATIVE CONDITIONING:

This conditioning programme does not include neck and other preventative conditioning programmes. The BokSmart website contains a specific neck conditioning programme and the previous BokSmart gym-based strength and conditioning document contains other preventative exercises. The “underground” strength and conditioning programmes outlined in this document should not replace any preventative conditioning exercises. It remains essential to perform preventative exercises, such as neck strengthening exercises together with the “underground” strength training programme.

GENERAL PRECAUTIONS:

1. When starting an exercise, ensure one is sufficiently warm. Complete warm-up exercises for each muscle group before commencing with a specific exercise e.g. complete a couple of push-ups to warm up the chest muscles before doing weighted chest press.
2. Always ensure the correct breathing patterns are used. Always take a deep breath (inhale) while the specific muscle worked is being lengthened (eccentric contraction), and breathe out (exhale) while the weight is being pushed or pulled. Do not hold your breath while performing any exercise.
3. Never work in pain. If a certain exercise causes pain, the player should immediately decrease the amount of weight. If this is not successful, then leave out that specific exercise for one week. If the pain is still present after one week when retrying the exercise, then leave that specific exercise out of your routine and consult a proficient medical professional.
4. Always perform a 10-minute cardiovascular warm-up, followed by 5 minutes of dynamic stretching prior to a training session. A short jog (10 min) is a perfect cardiovascular warm-up. Prior to an exercise session players should use dynamic stretches (joint movements where the range is gradually increased). After every session players should stretch, using static stretches (where a stretch is held for 20-30 seconds) for 5 minutes. Never stretch in pain; one should only feel a pulling sensation.

5. Always use good form and technique as described in the *EXERCISE DESCRIPTION SECTION*. Further specific precautions are described in this section.
6. Always have a partner nearby when performing challenging lifts.
7. When picking up a weight off the floor, always bend your knees and keep your back straight and stomach zipped up.
8. When lifting rocks, and other objects, be aware of dropping the object on any part of your body (especially your feet). Always ensure that the weight is 100% under control. If not, select a lighter weight/object.

GENERAL WARNING:

Certain exercises within this “underground” strength training programme bear a potential risk of injury if performed incorrectly or with bad technique. Exercises with a high risk of injury have the letters HR (High Risk), and exercises with an intermediate risk of injury have the letter IR (Intermediate Risk) after the exercise name in the *EXERCISE DESCRIPTION* section.

DISCLAIMER:

Although all the exercises are clearly described, and photos of correct technique are attached, players should consult with a suitable qualified person (e.g. a biokineticist) to ensure proper technique is used on all the exercises. BokSmart may not be held liable for any injury or harm incurred as a result of using this conditioning programme.

Table 1: Division of the rugby year into its respective mesocycles.

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT
Mesocycle (Period)	Off-Season Phase			Pre-Season Phase			In-Season Phase				Transition phase		
Resistance Training Emphasis (phase)	GP*	Hypertrophy		Strength	Power		Strength Maintenance				Rest		
Fitness Conditioning Emphasis	Aerobic & Anaerobic			Anaerobic & Aerobic			Fitness Maintenance				Rest		

T= Transition period; R = Rest; GP= General preparation

*This phase is dependent on current state of conditioning, it might not be necessary among individuals which have been resistance training during the previous season.



Figure 1: Items that are used as weights in the “Underground” Strength Training Programme.

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SENIOR “UNDERGROUND” CONDITIONING PROGRAMME:

	PERIOD:	OFF-SEASON		PRE-SEASON		IN-SEASON	
	TIME OF THE DAY	AM	PM	AM	PM	AM	PM
TYPICAL WEEK	MONDAY	UH1		US1		UIS1	
	TUESDAY	UH2			PRAC		PRAC
	WEDNESDAY		FC1	UP1		UIS2	
	THURSDAY	UH1			PRAC		PRAC
	FRIDAY	UH2		US2			
	SATURDAY					MATCH	
	SUNDAY		FC2				

UH1 or **UH2** = Underground Hypertrophy 1 or 2.

FC1 or **FC2** = Fitness Conditioning 1 or 2.

US1 or **US2** = Underground Strength 1 or 2.

UP1 = Underground Power 1.

UIS1 or **UIS2** = Underground In-season 1 or 2.

PRAC = Team training session.

MATCH = Rugby Match.

Please see the **SPECIFIC WORKOUT PROGRAMMES** section for further details and outline of each session above.

Each exercise within the programmes is detailed in the **EXERCISE DESCRIPTION** section.

Rest 1 week between the off-season and the pre-season phase, as well as 1 week between the pre-season and the in-season phase.

PLEASE SEE DISCLAIMER BEFORE STARTING THE CONDITIONING PROGRAMME.

YOUTH “UNDERGROUND” CONDITIONING PROGRAMME:

	PERIOD:	OFF-SEASON/ PRE-SEASON		IN-SEASON	
	TIME OF THE DAY	AM	PM	AM	PM
TYPICAL WEEK	MONDAY	YUCP1		YUCP1	
	TUESDAY		FC1**		PRAC
	WEDNESDAY	YUCP2		YUCP2	
	THURSDAY		FC2**		PRAC
	FRIDAY				
	SATURDAY	*YUCP1/2		MATCH	
	SUNDAY				

Once Youth rugby players have performed 8 weeks of the structured training programme they may progress to an **ADVANCED** programme. For the advanced programme, perform **AYUCP1 instead of YUCP1**, and perform **AYUCP2 instead of YUCP2**.

YUCP 1/2 = Youth Underground Conditioning Programme 1 or 2.

AYUCP 1/2 = Advanced Youth Underground Conditioning Programme 1 or 2.

FC1 or FC2 = Fitness Conditioning 1 or 2.

PRAC = Team training session.

MATCH = Rugby Match.

* Only perform an additional third workout in the week if no summer sport is played on a Saturday. When three workouts are performed each week, alternate between performing YUCP1 and YUCP2.

** Only perform additional fitness conditioning sessions if no summer sport is played. Where players participate in a summer sport, the summer sport practise should take preference.

Please see the **SPECIFIC WORKOUT PROGRAMMES** section for further details and outline of each session above.

Each exercise within the programmes is detailed in the **EXERCISE DESCRIPTION** section.

PLEASE SEE DISCLAIMER BEFORE STARTING THE CONDITIONING PROGRAMME.

SPECIFIC WORKOUT PROGRAMMES:

1. Underground Hypertrophy Programme 1 (UH1)
2. Underground Hypertrophy Programme 2 (UH2)
3. Underground Strength Programme 1 (US1)
4. Underground Strength Programme 2 (US2)
5. Underground Power Programme 1 (UP1)
6. Underground In-Season Programme 1 (UIS1)
7. Underground In-Season Programme 2 (UIS2)
8. Fitness Conditioning Programme 1 (FC1)
9. Fitness Conditioning Programme 2 (FC2)
10. Youth Underground Conditioning Programme 1 (YUCP1)
11. Youth Underground Conditioning Programme 2 (YUCP2)
12. Advanced Youth Underground Conditioning Programme 1 (AYUCP1)
13. Advanced Youth Underground Conditioning Programme 2 (AYUCP2)

1. UNDERGROUND HYPERTROPHY PROGRAMME 1 (UH1)

Rest 1-2 minutes for all exercises.

Perform exercises at a **slow to moderate** pace

2-4s up, 2-4s down

EXERCISE TO PERFORM		SETS	REPS*
Warm-up (<i>Light Jogging</i>)		1	10 minutes
Dynamic Stretching		1	5 minutes
EXERCISE FOR THE 1ST WORKOUT OF THE WEEK	EXERCISE FOR THE 2ND REPEAT OF THE WEEK		
Sandbag Chest Press	Vibracrete (Log) Chest Press	4	Minimum 8
Incline Push-ups on bricks	Concrete Brick Press	3	Minimum 8
Brick Flyes	Wide Grip Push-ups on brick	3	Minimum 8
Pull-ups	Rope Grip Pull-ups	4	Maximum Reps
Reverse Rows	Close Grip Reverse Rows	3	Maximum Reps
Bent Over Sandbag Rows	One Arm Row	3	Minimum 8
Sandbag Shoulder Press	Concrete Brick Shoulder Press	4	Minimum 8
Brick Side Raises	Bent Over Brick Raises	3	Minimum 8
Sandbag Curls	Concrete Brick Curls	3	Minimum 8
Rope Hammer Curls	Alternate Brick Curls	3	Minimum 8
Close Grip Push-ups	Sandbag Close Grip Press	3	Minimum 8
Standing French Press	Standing Rope Extensions	3	Minimum 8
Cool-Down & Stretch		1	5 minutes

* Due to greater difficulty with variation of load, players should add sufficient resistance (i.e. sand to the sandbag, size of the brick, water to the water canister etc.) to allow the minimum number of repetitions. However, **DO NOT STOP AT THE MINIMUM NUMBER OF REPETITIONS**, continue until you are no longer able to perform the exercise with proper technique. Where you perform 2 repetitions more than the minimum prescribed number on 2 consecutive sets, attempt to increase the load (weight) of the object you are lifting

Refer to the EXERCISE DESCRIPTION section for technique guidance. The exercise description is merely for descriptive purposes; consult with a suitably qualified professional (e.g. a biokineticist) to ensure correct form and technique is used while performing all the exercises.

2. UNDERGROUND HYPERTROPHY PROGRAMME 2 (UH2)

Rest 1-2 minutes for all exercises.

Perform exercises at a **slow to moderate** pace

2-4s up, 2-4s down, except for exercises denoted with a (P); these are explosive power exercises

EXERCISE TO PERFORM		SETS	REPS*
Warm-up (<i>Light Jogging</i>)		1	10 minutes
Dynamic Stretching		1	5 minutes
EXERCISE FOR THE 1ST WORKOUT OF THE WEEK	EXERCISE FOR THE 2ND REPEAT OF THE WEEK		
Sandbag Squat Jump (P)	Sandbag Long Jump (P)	3	6 only
Vibracrete Deadlifts	Good Morning	4	Minimum 8
Sandbag Step-Ups	Sandbag Squat	4	Minimum 8
Sandbag Walking Lunges	Sandbag Front Squats	4	Minimum 8
Straight Leg Deadlift	Hamstring Pendulum	4	Minimum 8
Hanging Hamstring Curl	Nordic Curls	4	Minimum 8 OR 6 **
Single Leg Calf Raise	Two Leg Calf Raise	4	Minimum 12 OR 20 **
Sandbag Sit-up	Sandbag Crunches	3	Minimum 20
Crunches	Sit-ups	3	Minimum 25
Plank Hold	Twist Crunches	3	1 min. OR Minimum 25**
Cool-Down & Stretch		1	5 minutes

* Due to greater difficulty with variation of load, players should add more or less resistance (i.e. amount of sand in the sandbag, size of the brick, amount of water in the water canister etc.) to allow the minimum number of repetitions. However, do not stop at the minimum number of repetitions, continue until you are no longer able to perform the exercise with proper technique. Where you perform 2 repetitions more than the minimum prescribed number on 2 consecutive sets, attempt to increase the load (weight) of the object you are lifting.

(P) = Power Exercises. These exercises should be performed with roughly 40-60% of the maximal weight that can be lifted in that specific movement. The focus of these exercises is speed and acceleration, therefore only the prescribed number of repetitions should be performed, and not any more

** Perform the first listed minimum number of repetitions for the first listed exercise (the exercise for the 1st workout of the week) and the second listed number of repetitions for the second listed exercise (the exercise for the 2nd repeat of the week).

Refer to the EXERCISE DESCRIPTION section for technique guidance. The exercise description is merely for descriptive purposes; consult with a suitably qualified professional (e.g. a biokineticist) to ensure correct form and technique is used while performing all the exercises.

3. UNDERGROUND STRENGTH PROGRAMME 1 (US1)

Rest 2-3 minutes for all exercises

Perform exercises at a **moderate** pace

2s up, 2s down, except for exercises denoted with a (P); these are explosive power exercises

EXERCISE TO PERFORM		SETS	REPS*
Warm-up (<i>Light Jogging</i>)		1	10 minutes
Dynamic Stretching		1	5 minutes
EXERCISE FOR ODD NUMBERED WEEKS (WEEKS 1,3,5, ETC.)	EXERCISE FOR EVEN NUMBERED WEEKS (WEEKS 2,4,6, ETC.)		
One-arm sandbag Snatch (P)	Explosive sandbag Press (P)	3	6 only
Explosive Rock Press (P)	Rock Throws (P)	3	6 only
Rock Chest Press	Sandbag Chest Press	4	Minimum 4
Sandbag Chest Press	Rock Chest Press	4	Minimum 4
Bent Over Rock Row	Rope Climbing	4	Minimum 4 OR Maximum Height**
Rope Climbing	Rope Pull	3	Maximum Height OR Maximum distance**
Rock Shoulder Press	Two-Sandbag Shoulder Press	3	Minimum 4
Sandbag Close Grip Press	Weighted Close Grip Push-ups	4	Minimum 6
Rock Curls	Alternate Sandbag Curls	3	Minimum 6
Cool-Down & Stretch		1	5 minutes

* Due to greater difficulty with variation of load, players should add more or less resistance (i.e. amount of sand in the sandbag, size of the brick, amount of water in the water canister etc.) to allow the minimum number of repetitions. However, do not stop at the minimum number of repetitions, continue until you are no longer able to perform the exercise with proper technique. Where you perform 2 repetitions more than the minimum prescribed number on 2 consecutive sets, attempt to increase the load (weight) of the object you are lifting.

(P) = Power Exercises. These exercises should be performed with roughly 40-60% of the maximal weight that can be lifted in that specific movement. The focus of these exercises is speed and acceleration, therefore only the prescribed number of repetitions should be performed, and not any more

** Perform the first listed minimum number of repetitions for the first listed exercise (the exercise for the 1st workout of the week) and the second listed number of repetitions for the second listed exercise (the exercise for the 2nd repeat workout of the week).

Refer to the EXERCISE DESCRIPTION section for technique guidance. The exercise description is merely for descriptive purposes; consult with a suitably qualified professional (e.g. a biokineticist) to ensure correct form and technique is used while performing all the exercises.

4. UNDERGROUND STRENGTH PROGRAMME 2 (US2)

Rest 2-3 minutes for all exercises

Perform exercises at a **moderate** pace

2s up, 2s down, except for exercises denoted with a (P); these are explosive power exercises

EXERCISES TO BE PERFORMED		SETS	REPS*
Warm-up (<i>Light Jogging</i>)		1	10 minutes
Dynamic Stretching		1	5 minutes
EXERCISE FOR ODD NUMBERED WEEKS (WEEKS 1,3,5, ETC.)	EXERCISE FOR EVEN NUMBERED WEEKS (WEEKS 2,4,6, ETC.)		
Sandbag Long Jump (P)	Sandbag Jump Squat (P)	3	6 only
Explosive Sandbag Clean (P)	Rock Throws (P)	3	6 only
Rock Squat	Two Sandbag Squat	4	Minimum 4
Rock Step-ups	Rock Walking Lunges	4	Minimum 4
Vibracrete deadlift	Good Morning	3	Minimum 4 OR minimum 8**
Good Morning	Vibracrete Straight Leg Deadlift	3	Minimum 8 OR minimum 4**
Nordic Curls	Hamstring Pendulum	3	Minimum 6
Sandbag Diagonal Sit-ups	Sandbag Sit-ups	3	Minimum 20
Cool-Down & Stretch		1	5 minutes

* Due to greater difficulty with variation of load, players should add more or less resistance (i.e. amount of sand in the sandbag, size of the brick, amount of water in the water canister etc.) to allow the minimum number of repetitions. However, do not stop at the minimum number of repetitions, continue until you are no longer able to perform the exercise with proper technique. Where you perform 2 repetitions more than the minimum prescribed number on 2 consecutive sets, attempt to increase the load (weight) of the object you are lifting.

(P) = Power Exercises. These exercises should be performed with roughly 40-60% of the maximal weight that can be lifted in that specific movement. The focus of these exercises is speed and acceleration, therefore only the prescribed number of repetitions should be performed, and not any more

** Perform the first listed minimum number of repetitions for the first listed exercise (the exercise for the 1st workout of the week) and the second listed number of repetitions for the second listed exercise (the exercise for the 2nd repeat workout of the week).

Refer to the EXERCISE DESCRIPTION section for technique guidance. The exercise description is merely for descriptive purposes; consult with a suitably qualified professional (e.g. a biokineticist) to ensure correct form and technique is used while performing all the exercises.

5. UNDERGROUND POWER PROGRAMME 1 (UP1)

Rest 3 minutes for all exercises

Perform all exercises with maximal controlled acceleration

EXERCISES TO BE PERFORMED	SETS	REPS
Warm-up (<i>Light Jogging</i>)	1	10 minutes
Dynamic Stretching	1	5 minutes
Explosive Sandbag Clean and Press (P)	4	6 only
One-Arm Sandbag Snatch (P)	4	6 only
Explosive Rock Press (P)	3	6 only
Explosive Rope Pull (P)	4	Pull 20-40 metre
Explosive Sled Pull (P)	4	Pull 20-40 metre
Explosive Sled Push (P)	4	Push 20-40 metre
Sandbag Sit-ups (P)	4	6 only
Plank Hold	3	1 minute
Cool-Down & Stretch	1	5 minutes

(P) = Power Exercises. These exercises should be performed with roughly 40-60% of the maximal weight that can be lifted in that specific movement. The focus of these exercises is speed and acceleration, therefore only the prescribed number of repetitions should be performed, and not any more

Refer to the EXERCISE DESCRIPTION section for technique guidance. The exercise description is merely for descriptive purposes; consult with a suitably qualified professional (e.g. a biokineticist) to ensure correct form and technique is used while performing all the exercises.

6. UNDERGROUND IN-SEASON PROGRAMME 1 (UIS1)

Rest 2-3 minutes for all exercises

Perform exercises at a **moderate** pace

2s up, 2s down, except for exercises denoted with a (P); these are explosive power exercises

EXERCISES TO BE PERFORMED		SETS	REPS*
Warm-up (<i>Light Jogging</i>)		1	10 minutes
Dynamic Stretching		1	5 minutes
EXERCISE FOR ODD NUMBERED WEEKS (WEEKS 1,3,5, ETC.)	EXERCISE FOR EVEN NUMBERED WEEKS (WEEKS 2,4,6, ETC.)		
Explosive Sandbag Press (P)	Sandbag Jump Squat (P)	3	6 only
Sandbag Long Jump (P)	Explosive Sandbag Clean (P)	3	6 only
Rock Squat	Two-Sandbag Squat	4	Minimum 4 OR 10**
Rock Step-ups	Sandbag Walking Lunges	3	Minimum 4 OR 10**
Rock Chest Press	Sandbag Chest Press	3	Minimum 4 OR 10**
Pull-ups	Rope Grip Pull-ups	3	Maximum Reps
Nordic Curls	Hamstring Pendulum	3	6 only OR minimum 10**
Plank Hold	Plank Hold	3	1 minute
Cool-Down & Stretch		1	5 minutes

* Due to greater difficulty with variation of load, players should add more or less resistance (i.e. amount of sand in the sandbag, size of the brick, amount of water in the water canister etc.) to allow the minimum number of repetitions. However, do not stop at the minimum number of repetitions, continue until you are no longer able to perform the exercise with proper technique. Where you perform 2 repetitions more than the minimum prescribed number on 2 consecutive sets, attempt to increase the load (weight) of the object you are lifting.

(P) = Power Exercises. These exercises should be performed with roughly 40-60% of the maximal weight that can be lifted in that specific movement. The focus of these exercises is speed and acceleration, therefore only the prescribed number of repetitions should be performed, and not any more

** Perform the first listed minimum number of repetitions for the first exercise and the second listed number of repetitions for the second listed exercise

Refer to the EXERCISE DESCRIPTION section for technique guidance. The exercise description is merely for descriptive purposes; consult with a suitably qualified professional (e.g. a biokineticist) to ensure correct form and technique is used while performing all the exercises.

7. UNDERGROUND IN-SEASON PROGRAMME 2 (UIS2)

Rest 2-3 minutes for all exercises

Perform exercises at a **moderate** pace

2s up, 2s down, except for exercises denoted with a (P); these are explosive power exercises

EXERCISES TO BE PERFORMED		SETS	REPS*
Warm-up (<i>Light Jogging</i>)		1	10 minutes
Dynamic Stretching		1	5 minutes
EXERCISE FOR ODD NUMBERED WEEKS (WEEKS 1,3,5, ETC.)	EXERCISE FOR EVEN NUMBERED WEEKS (WEEKS 2,4,6, ETC.)		
One Arm Sandbag Snatch (P)	One Arm Sandbag Snatch (P)	4	6 only
Explosive Sandbag Clean and Press (P)	Explosive Sandbag Clean and Press (P)	4	6 only
Explosive Rope Pull (P)	Explosive Rope Pull (P)	3	20-40 metres
Weighted Incline Push-ups on bricks	Wide Grip Push-ups on Bricks	3	Minimum 8
Sandbag Shoulder Press	Concrete Brick Shoulder Press	3	Minimum 8
Reverse Rows	Close Grip Reverse Rows	3	Minimum 8
Sandbag Curls	Rope Hammer Curls	3	Minimum 8
Lying Sandbag French Press	Standing Rope Extensions	3	Minimum 8
Twist Crunches	Twist Crunches	3	Minimum 20
Cool-Down & Stretch		1	5 minutes

* Due to greater difficulty with variation of load, players should add more or less resistance (i.e. amount of sand in the sandbag, size of the brick, amount of water in the water canister etc.) to allow the minimum number of repetitions. However, do not stop at the minimum number of repetitions, continue until you are no longer able to perform the exercise with proper technique. Where you perform 2 repetitions more than the minimum prescribed number on 2 consecutive sets, attempt to increase the load (weight) of the object you are lifting.

(P) = Power Exercises. These exercises should be performed with roughly 40-60% of the maximal weight that can be lifted in that specific movement. The focus of these exercises is speed and acceleration, therefore only the prescribed number of repetitions should be performed, and not any more

** Perform the first listed minimum number of repetitions for the first exercise and the second listed number of repetitions for the second listed exercise

Refer to the EXERCISE DESCRIPTION section for technique guidance. The exercise description is merely for descriptive purposes; consult with a suitably qualified professional (e.g. a biokineticist) to ensure correct form and technique is used while performing all the exercises.

8. FITNESS CONDITIONING PROGRAMME 1 (FC1)

EXERCISE	SETS	EFFORT SCALE
Any cardiovascular cross-training; examples include among various other activities: <ul style="list-style-type: none"> • Running • Chopping Wood • Sawing wood • Cycling. 	1	30-40 minutes @ low-moderate intensity (see below) <div style="text-align: right; margin-top: 20px;"> <p>6 no exertion at all</p> <p>7 extremely light</p> <p>8</p> <p>9 very light</p> <p>10</p> <p>11 light</p> <p>12</p> <p>13 somewhat hard</p> <p>14</p> <p>15 hard (heavy)</p> <p>16</p> <p>17 very hard</p> <p>18</p> <p>19 extremely hard</p> <p>20 maximal exertion</p> </div> <div style="margin-left: 100px; margin-top: 100px;"> Target effort level { </div>
Cool-Down & Stretch	1	5 minutes

9. FITNESS CONDITIONING PROGRAMME 2 (FC2)

Total Duration: 30 minutes (excluding warm-up, cool-down & stretch)

EXERCISE	SETS	ONE REPETITION =	EFFORT SCALE
Examples of high intensity activities include among various other activities: <ul style="list-style-type: none"> • Running hills • Running shuttles • Chopping Wood • Sled Pushing (see exercise description) • Sled Pulling (see exercise description) 	15	1 minute at near maximal effort (see effort table)	Very low effort { <ul style="list-style-type: none"> 6 no exertion at all 7 extremely light 8 very light 10 light 12 somewhat hard 14 hard (heavy) Near max effort { <ul style="list-style-type: none"> 16 very hard 18 extremely hard 20 maximal exertion
		1 minute at a very low effort (see effort scale)	
Cool-Down & Stretch	1	5 minutes	

10. YOUTH UNDERGROUND CONDITIONING PROGRAMME 1 (YUCP1)

Rest 30-60 seconds between exercises

EXERCISE TO BE PERFORMED	SETS	REPS *		
		WEEK 1-2	WEEK 3-6	WEEK 7 - ONWARDS
Warm-up (any cardio machine)	1	10 minutes		
Stretch	1	5 minutes		
Sandbag Squat	1-3	15	15,15	15,15,15
Sandbag Front Squat	1-3	15	15,15	15,15,15
Bodyweight Lunges	1	20	20	20
Two-leg Calf Raises	1-2	20	20,20	20,20
Push-ups on Bricks	1-3	20	20,20	20,20,20
Reverse Rows	1-3	1 X Max	2 X Max	3 X Max
Alternate Brick Curls	1-3	20	20,20	20,20,20
Crunches	1-3	20	20,20	20,20,20
Twist Crunches	1-3	20	20,20	20,20,20
Sit-ups	1-3	20	20,20	20,20,20
Good Morning (perform with only bodyweight, no sandbag)	1-3	10	10,10	10,10,10
Cool-Down & Stretch	1	5 minutes		

* Due to greater difficulty with variation of load, players should add more or less resistance (i.e. amount of sand in the sandbag, size of the brick, amount of water in the water canister etc.) to allow the minimum number of repetitions. However, do not stop at the minimum number of repetitions, continue until you are no longer able to perform the exercise with proper technique. Where you perform 2 repetitions more than the minimum prescribed number on 2 consecutive sets, attempt to increase the load (weight) of the object you are lifting.

Refer to the EXERCISE DESCRIPTION section for technique guidance. The exercise description is merely for descriptive purposes; consult with a suitable qualified person (e.g. a biokineticist) to ensure proper technique is used in all the exercises.

11. YOUTH UNDERGROUND CONDITIONING PROGRAMME 2 (YUCP2)

Rest 30-60 seconds between exercises

EXERCISE TO BE PERFORMED	SETS	REPS *		
		WEEK 1-2	WEEK 3-6	WEEK 7 - ONWARDS
Warm-up (any cardio machine)	1	10 minutes		
Stretch	1	5 minutes		
Incline Push-ups on Bricks	1-3	15	15,15	15,15,15
Brick Flyes	1-3	15	15,15	15,15,15
Close Grip reverse Rows	1-3	1 X Max	2 X Max	3 X Max
Sandbag Row	1-3	20	20,20	20,20,20
Sandbag Shoulder Press	1-3	20	20,20	20,20,20
Lying Brick French Press	1-3	20	20,20	20,20,20
Brick Side Raises	1-3	20	20,20	20,20,20
Alternate Brick Curls	1-3	20	20,20	20,20,20
Crunches	1-3	20	20,20	20,20,20
Twist Crunches	1-3	20	20,20	20,20,20
Sit-ups	1-3	20	20,20	20,20,20
Good Morning (perform with only bodyweight, no sandbag)	1-3	10	10,10	10,10,10
Cool-Down & Stretch	1	5 minutes		

* Due to greater difficulty with variation of load, players should add more or less resistance (i.e. amount of sand in the sandbag, size of the brick, amount of water in the water canister etc.) to allow the minimum number of repetitions. However, do not stop at the minimum number of repetitions, continue until you are no longer able to perform the exercise with proper technique. Where you perform 2 repetitions more than the minimum prescribed number on 2 consecutive sets, attempt to increase the load (weight) of the object you are lifting.

Refer to the EXERCISE DESCRIPTION section for technique guidance. The exercise description is merely for descriptive purposes; consult with a suitable qualified person (e.g. a biokineticist) to ensure proper technique is used in all the exercises.

12. ADVANCED YOUTH UNDERGROUND CONDITIONING PROGRAMME 1 (AYUCP1)

Rest 30-60 seconds between exercises

EXERCISE TO BE PERFORMED	SETS	REPS *
		WEEK 1-2
Warm-up (any cardio machine)	1	10 minutes
Stretch	1	5 minutes
Sandbag Squat	3	12,10,6
Sandbag Front Squat	3	12,10,8
Sandbag Walking Lunges	2	20
Two-leg Calf Raises	2	20
Weighted Push-ups on Bricks	3	12,10,6
Reverse Rows	3	Maximum
Alternate Sandbag Curls	3	15,12,10
Crunches	3	25
Twist Crunches	3	25
Sit-ups	3	25
Good Morning	3	10
Cool-Down & Stretch	1	5 minutes

* Due to greater difficulty with variation of load, players should add more or less resistance (i.e. amount of sand in the sandbag, size of the brick, amount of water in the water canister etc.) to allow the minimum number of repetitions. However, do not stop at the minimum number of repetitions, continue until you are no longer able to perform the exercise with proper technique. Where you perform 2 repetitions more than the minimum prescribed number on 2 consecutive sets, attempt to increase the load (weight) of the object you are lifting.

Refer to the EXERCISE DESCRIPTION section for technique guidance. The exercise description is merely for descriptive purposes; consult with a suitable qualified person (e.g. a biokineticist) to ensure proper technique is used in all the exercises.

13. ADVANCED YOUTH UNDERGROUND CONDITIONING PROGRAMME 2 (AYUCP2)

Rest 30-60 seconds between exercises

EXERCISE TO BE PERFORMED	SETS	REPS *
		WEEK 1-2
Warm-up (any cardio machine)	1	10 minutes
Stretch	1	5 minutes
Weighted Incline Push-ups on Bricks	3	12,10,6
Brick Flyes	3	12,10,8
Close Grip reverse Rows	3	Maximum
Sandbag Row	3	12,10,8
Sandbag Shoulder Press	3	12,10,8
Lying Sandbag French Press	3	12,10,8
Brick Side Raises	3	12,10,8
Sandbag Curls	3	12,10,8
Crunches	3	20
Twist Crunches	3	20
Sit-ups	3	20
Good Morning	3	10
Cool-Down & Stretch	1	5 minutes

* Due to greater difficulty with variation of load, players should add more or less resistance (i.e. amount of sand in the sandbag, size of the brick, amount of water in the water canister etc.) to allow the minimum number of repetitions. However, do not stop at the minimum number of repetitions, continue until you are no longer able to perform the exercise with proper technique. Where you perform 2 repetitions more than the minimum prescribed number on 2 consecutive sets, attempt to increase the load (weight) of the object you are lifting.

Refer to the EXERCISE DESCRIPTION section for technique guidance. The exercise description is merely for descriptive purposes; consult with a suitable qualified person (e.g. a biokineticist) to ensure proper technique is used in all the exercises.

EXERCISE DESCRIPTION

This section includes various exercises which may be performed as part of the “underground” resistance training programme. All exercises listed in the *SPECIFIC WORKOUT PROGRAMMES* section are listed below. In addition, this section also describes certain additional exercises which may be performed or included as alternatives.

CHEST MUSCLES EXERCISES

- 1) Sandbag Chest Press
- 2) Vibracrete (Log) Chest Press
- 3) Rock Chest Press
- 4) Concrete Brick Chest Press
- 5) Push-ups on Bricks
- 6) Weighted Push-ups on Bricks
- 7) Incline Push-ups on Bricks
- 8) Weighted Incline Push-ups on Bricks
- 9) Brick Flyes
- 10) Wide Grip Push-ups on Bricks

BACK MUSCLES EXERCISES

- 1) Pull-ups
- 2) Bent Over Sandbag Row
- 3) Bent Over Rock Row
- 4) Close Grip Reverse Rows
- 5) Reverse Rows
- 6) Rope Grip Pull-ups
- 7) Rope Climbing
- 8) One Arm Row
- 9) Good Morning
- 10) Rope Pull

SHOULDER MUSCLES EXERCISES

- 1) Two-Sandbag Shoulder Press
- 2) Sandbag Shoulder Press
- 3) Concrete Brick Shoulder Press
- 4) Rock Shoulder Press
- 5) Brick Side Raises
- 6) Bent over Brick Raises
- 7) Sandbag Shrugs
- 8) Rock Shrugs

ARM MUSCLES (BICEP AND TRICEP) EXERCISES

- 1) Concrete Brick Curl
- 2) Alternate Brick Curl
- 3) Rope Hammer Curls
- 4) Sandbag Curls
- 5) Rock Curls
- 6) Alternate Sandbag Curls
- 7) Standing Sandbag French Press
- 8) Lying Sandbag French Press
- 9) Lying Brick French Press
- 10) Sandbag Close Grip Press
- 11) Weighted Close Grip Push-ups
- 12) Standing Rope Extensions

LEG MUSCLES (QUADRICEPS, HAMSTRINGS AND CALVES) EXERCISES

- 1) Sandbag Squat
- 2) Two Sandbag Squat
- 3) Sandbag Front Squat
- 4) Rock Squat
- 5) Sandbag Walking Lunges
- 6) Rock Walking Lunges
- 7) Vibracrete Deadlifts
- 8) Vibracrete Straight Leg Deadlifts
- 9) Sandbag Step-ups
- 10) Rock Step-ups
- 11) Single Leg Calf Raise
- 12) Two Leg Calf Raise

- 13) Hanging Hamstring Curls
- 14) Hamstring Pendulum
- 15) Nordic Curls

ABDOMINAL MUSCLES EXERCISES

- 1) Sit-ups
- 2) Sandbag Sit-ups
- 3) Crunches
- 4) Sandbag Crunches
- 5) Plank Hold
- 6) Sandbag Diagonal Sit ups
- 7) Twist Crunches

WHOLE BODY POWER EXERCISES

- 1) Explosive Sandbag Cleans
- 2) Explosive Sandbag Press
- 3) Explosive Power Clean and Press
- 4) One-arm Sandbag Snatch
- 5) Rock Throws
- 6) Explosive Rock Press
- 7) Explosive Rope Pull
- 8) Explosive Sled Pull
- 9) Sandbag Long Jump
- 10) Sandbag Squat Jumps
- 11) Sled Push

CHEST MUSCLE EXERCISES:

1. FLAT SANDBAG CHEST PRESS:

- Lie on a stump or bench and hold one sandbag in each hand, slightly wider than shoulder width and hands at approximately nipple level (start position).
- From the start position, press the sandbags up to the mid-point position.
- From the mid-point position, lower the sandbags in a controlled manner back down to the start position.
- Do not arch the back or move your feet during the lift.

START:



MIDPOINT:



2. VIBRACRETE (LOG) CHEST PRESS (HR)

- In preparation for the lift, stand the vibracrete pillar (or log) straight up while sitting (on the ground) next to it, holding it up with both hands. Slowly and carefully move from the sitting position to the position shown in the preparation picture below.
- Once in the preparation position, carefully lift the weight off the ground into the start position
- From the start position, lower the weight (may be vibracrete pillar, tree log or any other similar weighted and shaped object) until the elbows touch, but do not fully rest, on the ground (mid-point position)
- From the mid-point position, push the weight back up to the start position.

PREPARATION:



START:



MID-POINT:



3. ROCK CHEST PRESS (HR)

- In preparation for the lift (preparation steps), pick the rock up off the floor. Ensure your back is as straight as possible when picking up the rock. From the standing position, squat down and place the rock on your knees. Get your hands in a strong position to support the rock, and then carefully roll backwards on your back (start position).
- From the start position, carefully press the rock upwards off the chest until in the mid-point position, and then carefully lower it again.
- This exercise may be dangerous if performed incorrectly or with too heavy a load, so ensure that the rock is not too heavy and always ensure that you have a good grip on the rock to avoid the possibility of slipping out of hand while lifting the rock off the chest.

PREPARATION:



START:



MID-POINT:



4. CONCRETE BRICK CHEST PRESS (HR)

- Using similar preparation procedures as described for the Rock Press (previous exercise), carefully assume the start position. This exercise may be performed either on the ground, or on a stump or bench as shown in the pictures below.
- Ensure a good grip on the concrete block.
- From the start position, lower the brick until it touches the chest (mid-point)
- From the mid-point carefully press the brick back up to the start position.

START:



MID-POINT:



5. PUSH-UP ON BRICKS

- Place your hands on bricks, as shown in the start position below.
- Maintain a straight back and body throughout the exercise
- Do not hollow the back.
- From the start position, lower the body as low as possible, without any discomfort or pain (mid-point).
- From the mid-point position, push the body back up to the start position.

START:



MID-POINT:



6. WEIGHTED PUSH-UPS ON BRICKS

- Place a sandbag on your shoulders to make the exercise more challenging.
- Follow the instructions for push-ups above.
- DO NOT place the sandbag on your neck.

START:



MID-POINT:



7. INCLINE PUSH-UPS ON BRICKS

- Place your hands on bricks, as shown in the start position below, with your feet elevated on either a stump, rock or step
- Maintain a straight back and body throughout the exercise
- Do not hollow the back.
- From the start position, lower the body as low as possible, without any discomfort or pain (mid-point).
- From the mid-point position, push the body back up to the start position.

START:



MID-POINT:



8. WEIGHTED INCLINE PUSH-UPS ON BRICKS

- Place a sandbag on your shoulders to make the exercise more challenging.
- Follow the instructions for incline push-ups above.
- Do not place the sandbag on your neck.

START:



MID-POINT:



9. BRICK FLYES

- Grasp two bricks (or an appropriately sized rock), one in each hand, and assume the start position on a stump or bench.
- Lower the bricks, keeping them parallel in a wide arc until they are in line with the chest or shoulders (mid-point).
- From the mid-point, contract the chest muscles to push the bricks back to the start position in a wide arc.

START:



MID-POINT:



10. WIDE GRIP PUSH-UPS

- Place your hands on bricks, as shown in the start position below. For the purpose of this exercise the bricks are placed further apart than for the conventional push-up, previously described.
- Maintain a straight back and body throughout the exercise
- Do not hollow the back.
- From the start position, lower the body as low as possible, without any discomfort or pain. (mid-point)
- From the mid-point position, push the body back up to the start position.

START:



MID-POINT:



BACK MUSCLE EXERCISES

1. PULL-UPS

- Find a branch on a tree which is high enough to hang freely and strong enough to take your weight.
- Grip the branch with a strong overhand grip (start position). As a more rugby functional variation, an underhand grip may also be used.
- From this hanging position pull upwards until your chin is in line with the branch (mid-point).
- Lower yourself in a controlled manner back down to the start position with arms fully extended.
- Keep your body still throughout the exercise.
- Once the exercise becomes easy to perform it may be made more challenging through attaching additional weight, i.e. sandbag between your legs.

START:



MID-POINT:



2. BENT OVER SANDBAG ROW

- Assume a shoulder width stance and grip the sandbag with two hands, as shown below.
- Ensure that the back remains straight throughout the exercise.
- Pull the Sandbag from the start position up towards the lower chest or upper abdomen using the back muscles, while pointing the elbows upwards (Mid-point).
- Lower the weight back to the start position.
- Ensure that the torso, knees and back are kept in the same position throughout the lift.

START:



MID-POINT:



3. BENT OVER ROCK ROW (HR)

- Assume a shoulder width stance and grip the rock with two hands, as shown below.
- Ensure that the back remains straight throughout the exercise.
- Use a deadlift technique (see deadlift) to initially lift the weight off the ground into the start position.
- Follow the instructions as shown for sandbag rows above.

START:



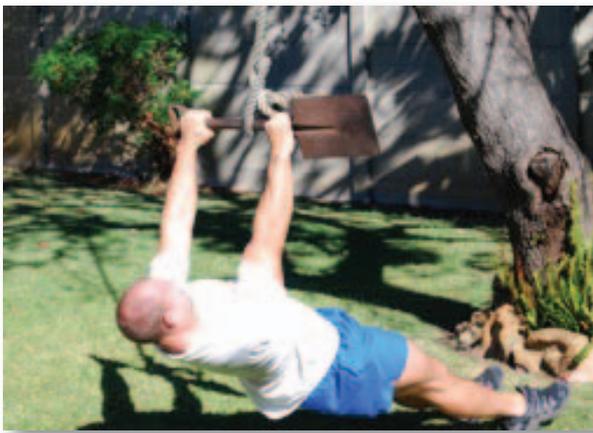
MID-POINT:



4. REVERSE ROWS

- For the purpose of this exercise, tie a rope and spade (or strong broomstick) to a rope hanging from a tree, at the height shown in the picture.
- Grip the spade with a strong overhand grip (start position).
- From this hanging position pull upwards until your chest touches the spade (mid-point).
- Lower yourself in a controlled manner back down to the start position with arms fully extended.
- Keep your body straight throughout the exercise.
- Once the exercise becomes easy to perform it may be made more challenging through attaching an additional weight, i.e. sandbag placed on your chest.

START:



MID-POINT:



5. CLOSE GRIP REVERSE ROWS

- For the purpose of this exercise, tie a knot, at an appropriate height, in a rope hanging from a tree, as shown in the picture below.
- Grip the rope with a strong grip, and hang with straight body, with only the feet touching the ground (start position).
- From this hanging start position pull upwards until your chest touches the rope (mid-point).
- Lower yourself in a controlled manner back down to the start position with arms fully extended.
- Keep your body straight throughout the exercise.
- Once the exercise becomes easy to perform it may be made more challenging through attaching an additional weight, i.e. sandbag placed on your chest.

START:



MID-POINT:



6. ROPE GRIP PULL-UPS

- Grip a rope hanging from a tree in a strong grip with one hand above the other (start position).
- From this hanging position pull upwards until your chin is in line with your two hands (mid-point).
- Lower yourself in a controlled manner back down to the start position with arms fully extended.
- Keep alternating your grip (hands) between sets, i.e. perform the first set with the left hand above the right, and the second set with the right hand above the left hand.
- Once the exercise becomes easy to perform it may be made more challenging through attaching additional weight, i.e. sandbag between your legs.

START:



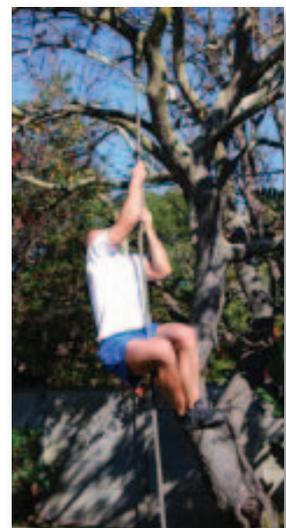
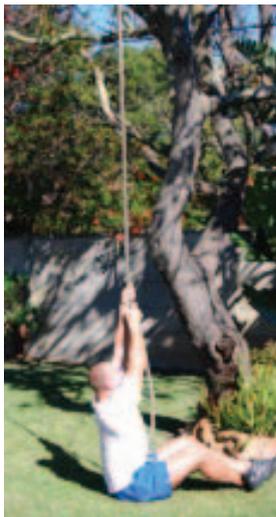
MID-POINT:



7. ROPE CLIMBING

- Grip a rope hanging from a tree in a strong grip with one hand above the other, you may either start the exercise through sitting on the ground (if you are limited by the length of the rope) or in a hanging position (if the rope is very long) (start position).
- From this start position pull your body upwards and shift your bottom hand upwards.
- Keep on alternating hands until you reach the top of the rope.
- In the pictures below, the feet are not used at all, this is an advanced technique.
- For individuals who are not able to climb the rope without the use of their feet may start use their feet as assistance. They should however aim to progress to climbing the rope without the use of their feet.

START:



8. ONE ARM ROW

- For the purpose of this exercise, find any water can or container or any other weight with a handle. If not available a sandbag may also be used.
- Place one knee on a stump or bench and assume the start position, shown below.
- Pull the weight up in line with the abdomen, keeping the elbow close to the body (mid-point).
- From the mid-point position, lower the weight back to the start position in a controlled manner.
- Maintain a straight spine throughout the lift.

START:



MID-POINT:



9. GOOD MORNING (HR)

- Assume a stance as shown below, with a sandbag placed firmly on the upper back.
- Bend over, keeping the back dead straight and knees slightly bent. (Midpoint)
- Return back to the start position.
- Ensure that the majority of the sandbag's weight is on the shoulders and upper back and not all on the neck.

START:



MID-POINT:



10. ROPE PULL

- Attach a thick rope to any sled or weight you will be able to pull along the ground.
- Using one arm at a time, pull the weighted object towards yourself.
- Ensure that your back stays in a straight and strong position, do not bend your lower back.
- If the rope is not long enough, get up and retreat to the required distance and continue pulling until fatigued or until the goal has been reached.
- If the exercise is too easy, add additional weight.
- The pictures below show the progressive movements (steps) of the rope pull.

START



SHOULDER MUSCLE EXERCISES

1. TWO-SANDBAG SHOULDER PRESS

- Stand in a firm position with straight back, holding one sandbag in each hand; at the level of the ears (start position). Alternatively, one can sit on a sit on a stump or bench.
- From the start position, press the sandbags up until the arms are extended overhead (mid-point).
- Lower the sandbags again in a controlled manner until the hands are in line with the ears.
- Do not arch the back or use the legs to jerk the weight up.
- More or less weight may be selected through adding more or less sand to the bags.

START:



MID-POINT:



2. SANDBAG SHOULDER PRESS

- Stand in a firm position with straight back. Hold a sandbag at shoulder height (start position).
- Grip the bag firmly on either side.
- From the start position, press the sandbag up until the arms are extended overhead (mid-point).
- Lower the sandbag again in a controlled manner until the hands are in line with the shoulders.
- Do not arch the back or use the legs to jerk the weight up.
- More or less weight may be selected through adding more or less sand to the bag.

START:



MID-POINT:



3. CONCRETE BRICK SHOULDER PRESS (HR)

- Stand in a firm position with straight back, holding a concrete brick at shoulder height (start position).
- Ensure a good strong grip on the brick, preferably with thumbs underneath the brick.
- From the start position, press the concrete brick up until the arms are extended overhead (mid-point).
- Lower the brick again in a controlled manner until the hands are in line with the shoulders.
- Do not arch the back or use the legs to jerk the weight up.

START:



MID-POINT:



4. ROCK SHOULDER PRESS (HR)

- In preparation for the lift, use a deadlift technique (see deadlift) to pick the rock up off the ground and place it on the knees as shown below in the preparation position.
- From this preparation position, lift the weight up to the start position. Keep the rock close to the body while doing this.
- In the start position, stand in a firm position with straight back, holding the rock at shoulder height.
- Ensure a good firm and strong grip on the rock.
- From the start position, press the rock up until the arms are extended overhead (mid-point).
- Lower the rock again in a controlled manner until the hands are in line with the shoulders.
- Ensure the strongest possible grip when lifting the rock. In the examples below grooves on the rock are used to effectively secure the grip.
- Do not arch the back during the lift.

PREPARATION:



START:



MID-POINT:



5. BRICK SIDE RAISES

- Use one brick, or tie an appropriate number of bricks together to add resistance to this exercise.
- Grasp the two sets of bricks and hold them in front of the body, keeping the back straight and arms extended (start position).
- Raise the bricks upwards and sideways in line with the shoulders (Mid-point).
- Lower the bricks back to the start position in a controlled manner.
- Do not jerk or bounce during any stage of the exercise.
- Keep a straight back throughout.

START:



MID-POINT:



6. BENT OVER BRICK RAISES

- Use one brick, or tie an appropriate number of bricks together to add resistance to this exercise.
- Grasp the two sets of bricks and hold them in front of the body while bending forwards, keeping a 90° angle and keeping the back straight (start position).
- Raise the bricks upwards and sideways in line with the shoulders (Mid-point).
- Lower the bricks back to the start position in a controlled manner.
- Do not jerk or bounce during any stage of the exercise.
- Keep a straight back throughout.

START:



MID-POINT:



7. SANDBAG SHRUGS

- Grasp the sandbag and hold it in front of the body as shown in the start position.
- Lift the shoulders upwards as far as possible (mid-point)
- Try and hold the sandbag at the mid-point position for a second or two before lowering it back down to the start position.
- Do not jerk or bounce during any stage of the exercise.

START:



MID-POINT:



8. ROCK SHRUGS

- Hold the rock in a firm strong grip, as shown below in the start position.
- Follow the instructions as explained for a sandbag shrug above.

START:



MID-POINT:



ARM MUSCLE EXERCISES (BICEP AND TRICEP):

1. CONCRETE BRICK CURL (HR)

- Grip a concrete brick with a strong grip and a straight back as indicated in the start position
- Curl the weight up to the midpoint position by only using the bicep muscles.
- Keep the torso in the same position throughout the movement, do not jerk the weight up.
- Ensure a straight back and slightly bent knees throughout the exercise.

START:



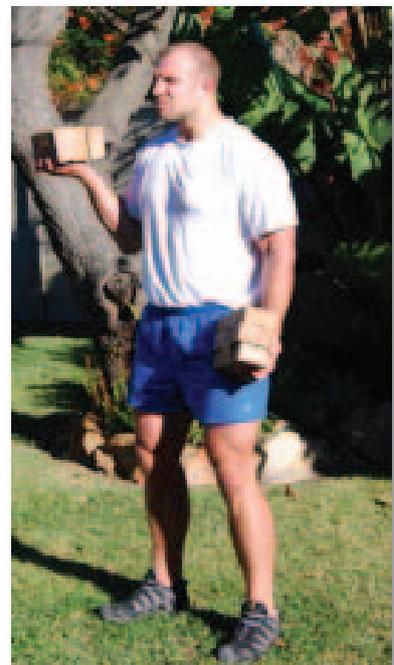
MID-POINT:



2. ALTERNATE BRICK CURL

- Grasp two sets of bricks, one set in each hand, and assume the start position as indicated below.
- Alternate between performing a curl with the left and the right arm.
- Move the bricks up and down in a controlled motion.
- Do not swing or jerk the bricks up.
- Ensure a straight back and slightly bent knees throughout the exercise.

START:



3. ROPE HAMMER CURLS

- Tie a rope through a weight, and assume the start position, with straight back, as shown below.
- For the start position, curl the weight up while keeping the back straight and thumbs pointed upwards
- From mid-point position, lower the weight in a controlled manner back down to the start
- Ensure a straight back and slightly bent knees throughout the exercise.

START:



MID-POINT:



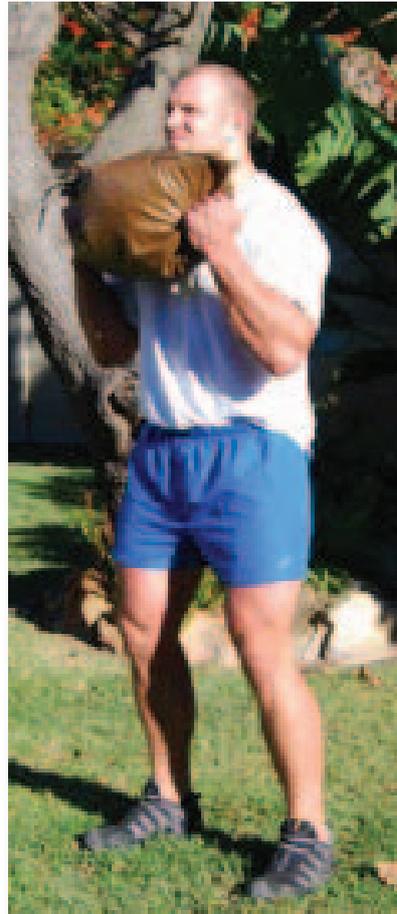
4. SANDBAG CURLS

- Hold the sandbag in a firm strong grip, as shown below in the start position.
- Follow the instructions as explained for the Concrete Brick Curls.

START:



MID-POINT:



5. ROCK CURLS (HR)

- Hold the rock in a firm strong grip, as shown below in the start position.
- Follow the instructions as explained for the Concrete Brick Curls.
- If possible use the natural grooves in the rock to secure a strong grip.

START:



MID-POINT:



6. ALTERNATE SANDBAG CURLS

- Grasp two sandbags, one in each hand, and assume the start position as indicated below.
- Follow the instructions as explained for the Alternate Brick Curls above.

START:



7. STANDING FRENCH PRESS

- Hold a sandbag in a firm and strong overhead grip, as shown below in the start position.
- From the start position, lower the sandbag in a controlled manner down to the mid-point position.
- From the mid-point position, extend the elbows while lifting the bag back up to the start position.
- Keep the elbows in the same position throughout the exercise.

START:



MID-POINT:



8. LYING SANDBAG FRENCH PRESS

- Grip a sandbag and assume the position indicated in the start position with arms fully extended, as shown below.
- Lower the sandbag down slowly towards, but not touching, the forehead (mid-point).
- From the mid-point position press the weight back up to the start position.
- Keep the elbows in the same position throughout the exercise.
- More or less weight may be selected through adding more or less sand to the bag.

START:



MID-POINT:



9. LYING BRICK FRENCH PRESS

- Hold two sets of bricks, one set in each hand, as shown below in the start position.
- Follow the instructions as explained for the Sandbag French Press above.

START:



MID-POINT:



10. SANDBAG CLOSE GRIP PRESS

- Hold two sandbags, one in each hand, and press them together as shown below in the start position.
- From the start position, press the two sandbags up to the mid-point position.
- From the mid-point position, lower the sandbags in a controlled manner back to the start position, stop before the sandbags rest on the chest.
- More or less weight may be selected through adding more or less sand to the bags.

START:



MID-POINT:



11. WEIGHTED CLOSE GRIP PUSH-UPS

- For the purpose of the exercise, place a sandbag on your shoulders to make the exercise more challenging. If it is too difficult, perform without a sandbag.
- Place your hands next to each other, and assume a push-up position, as shown in the start position below.
- Maintain a straight back and body throughout the exercise, do not hollow the back.
- From the start position, lower the body to approximately 5cm from the ground (mid-point).
- From the mid-point position, push the body back up to the start position.
- Ensure that the weight of the sandbag is on the shoulders and not resting on the head and neck.

START:



MID-POINT:



12. STANDING ROPE EXTENSIONS

- Hold a rope, tied to a weight, as shown below in the start position.
- From the start position, lower the weight in a controlled manner down to the mid-point position.
- From the mid-point position, extend the elbows while pressing the weight back up to the start position.
- Keep the elbows in the same position throughout the exercise.
- Do not jerk or bend the back while performing the exercise.

START:



MID-POINT:



LEG MUSCLE EXERCISES:

1. SANDBAG SQUAT (IR)

- Grasp a sandbag with two hands, behind the neck, as shown in the picture below.
- Position the feet shoulder width apart with toes pointed slightly outwards (START POSITION)
- Tilt the pelvis forward (i.e. press the bum out) and allow the hips and knees to slowly bend, lower the weight while keeping the back straight and head and elbows up. Do not round the back at any stage.
- Continue flexing the hips and knees until the thighs are parallel to the floor (Midpoint).
- Keep the eyes and head up while performing the squat
- From the midpoint, extend the hips and knees while maintaining the same body position as when lowering the weight, with back flat, head and elbows up.
- Continue extending the hips and knees until the start position is reached.
- Never bend the back while performing a squat.
- If you are not able to maintain a straight back when squatting all the way down (thigh parallel), only go as low as you can with your back straight.

START:



MID-POINT:



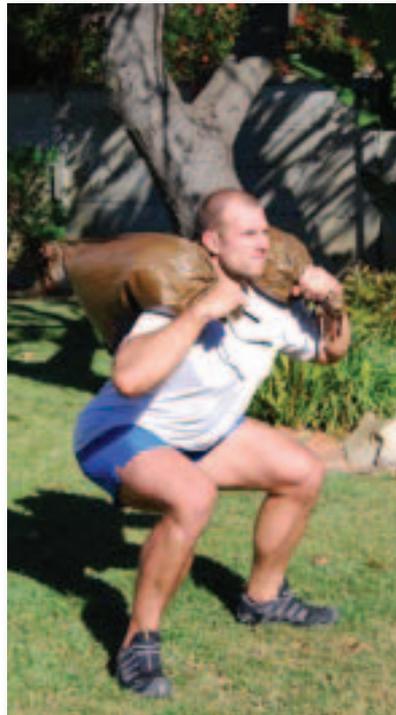
2. TWO SANDBAG SQUAT (IR)

- Grasp two sandbags, one in each hand, as shown in the picture below.
- Perform the exercise as described for the sandbag squat above.
- The weight of the two sandbags should rest on the shoulders. This squat allows a greater amount of weight to be added, when compared to the one sandbag squat described above.

START:



MID-POINT:



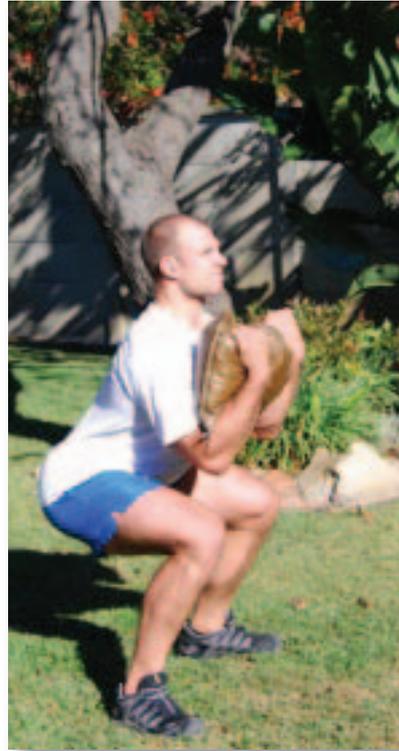
3. SANDBAG FRONT SQUAT (IR)

- Grasp a sandbag, in a cradle position, as shown in the picture below.
- Perform the exercise as described for the sandbag squat above.

START:



MID-POINT:



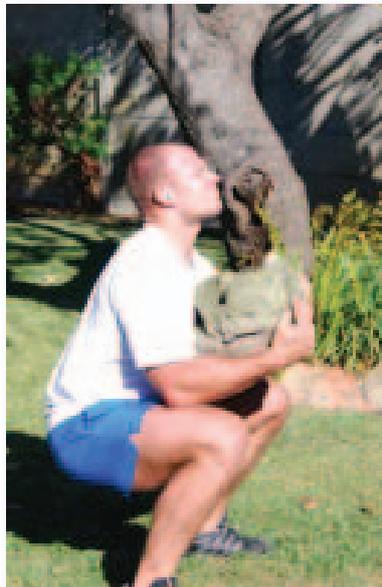
4. ROCK SQUAT (HR)

- In preparation for this exercise, ensure that your back is straight when lifting the rock off the floor.
- Hold a rock, in a strong firm grip, with arms wrapped around the rock, as shown in the picture below.
- Perform the exercise as described for the sandbag squat previously described.
- For additional safety (see Optional Variation), the rock may be lifted off a stump or bench, and the squat may be performed over a stump of bench as shown in the picture on the far right.

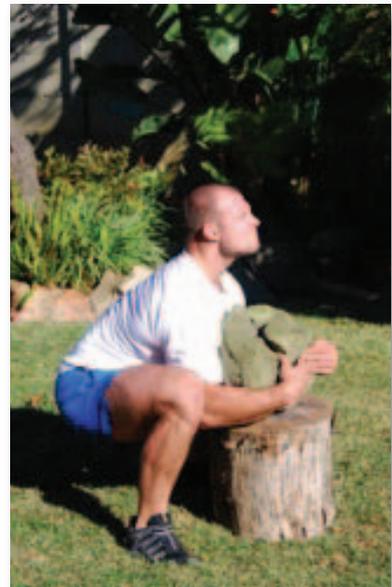
START:



MID-POINT:



OPTIONAL VARIATION:



5. SANDBAG WALKING LUNGES

- Grasp a sandbag with two hands, behind the neck, as shown in the picture below.
- Step forward and lower the knee of the back leg until it is 1cm from the ground (mid-point 1).
- Forcefully drive upwards and forwards using both legs while taking a step forward with the back leg.
- Continue this movement while “walking” forward step by step. Each step is one repetition.

START:



MID-POINT 1:



MID-POINT 2:



6. ROCK WALKING LUNGES (HR)

- In preparation for this exercise, ensure that your back is straight when lifting the rock off the floor.
- Hold a rock, in a strong firm grip, with arms wrapped around the rock, as shown in the picture below.
- Perform the exercise as described for the sandbag walking lunges above.

START:



MID-POINT 1:



MID-POINT 2:



7. VIBRACRETE DEADLIFTS (HR)

- Stand with feet flat on the ground and placed between hip and shoulder width apart, with toes pointed slightly outward.
- Grasp the vibracrete pillar with a closed alternated grip (one hand over and one hand under) slightly wider than shoulder width while keeping the shoulders above the hips and back straight and as upright as possible. (start position)
- In the start position the torso should be as upright as possible to avoid putting strain on the back.
- From the start position lift the bar off the floor by extending the hips and knees. Keep the bar as close to the body as possible and pull the weight until the body is erect. (Midpoint)
- From the midpoint, lower the weight down slowly in a controlled manner with exactly the same body position used to lift the weight.
- Maintain a flat back body position with chest up and out throughout the exercise.

START:



MID-POINT:



8. STRAIGHT LEG DEADLIFTS (HR)

- In preparation for the lift, perform a deadlift as described above.
- When in the upright position (start position), while maintaining a slight bend in the knees, bend forward as if to touch the toes. Go until your hamstrings start to pull (mid-point position).
- From the mid-point position, raise the weight back up to the start position, while maintaining a straight back throughout.
- It is important when performing this exercise that the back remains straight, and does not bend.
- This exercise strengthens predominantly the hamstring muscles and therefore this is where the predominant muscle strain should be felt.
- This exercise is significantly more difficult than a conventional deadlift, therefore if a vibracrete pillar cannot be used, a sandbag or another lighter weight should be used.

START:



MID-POINT:



9. SANDBAG STEP-UPS

- Hold a sandbag in a cradle position, as shown in the picture below.
- Place one leg on a stump, step or bench (start position)
- Drive off the leg on the stump by extending the hip and knee. Only use the leg on the step to generate the force required to perform the step-up.
- Once at the midpoint, lower back down to the start position in a controlled movement.
- Perform the same amount of repetitions for each leg.

START:



MID-POINT:



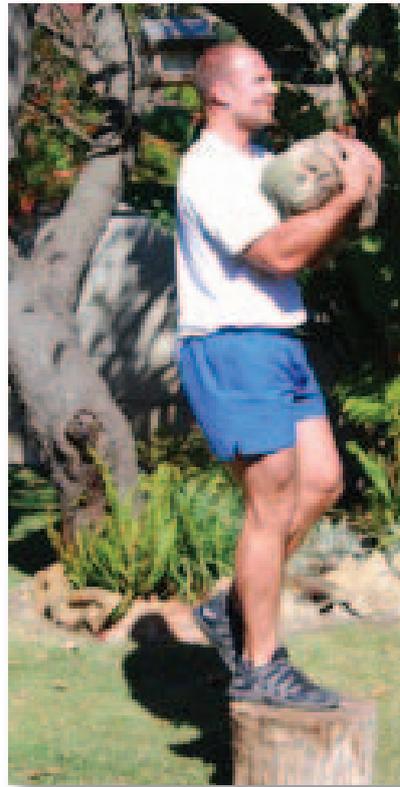
10. ROCK STEP-UPS

- In preparation for this exercise, ensure that your back is straight when lifting the rock off the floor.
- Hold a rock, in a strong firm grip, with arms wrapped around the rock, as shown in the picture below.
- Perform the exercise as described for the sandbag step-up above.

START:



MID-POINT:



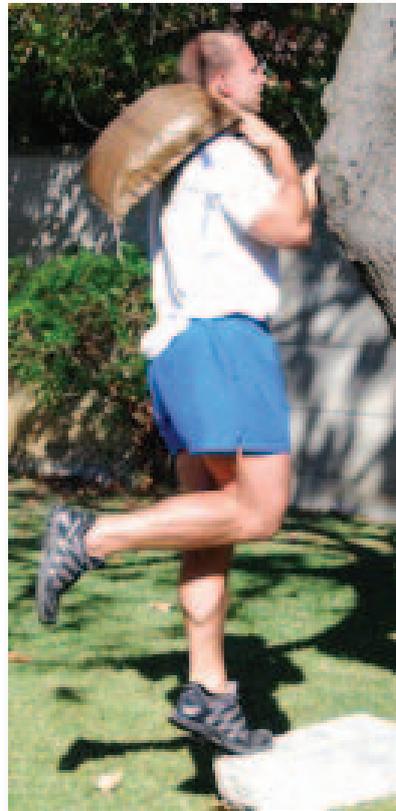
11. SINGLE LEG CALF RAISE

- Hold a sandbag over the shoulder as shown in the picture below. .
- Place the ball of the foot on the edge of a brick or step, with heel lower than the ankle (Start position)
- Lift the body upwards by flexing the calf muscle.
- Once at the midpoint, lower back down to the start position in a slow controlled movement.
- Change legs and repeat, perform the same number of repetitions on each leg.

START:



MID-POINT:



12. TWO LEG CALF RAISE

- Hold a sandbag over the shoulder as shown in the picture below. .
- Place the balls of the feet on the edge of a brick or step, with heel lower than the ankle (Start position)
- Lift the body upwards by flexing the calf muscles.
- Once at the midpoint, lower back down to the start position in a slow controlled movement.

START:



MID-POINT:



13. HANGING HAMSTRING CURL

- Hang from a tree as shown in the start position below, holding a sandbag between your feet.
- From the start position, curl the sandbag up until a 90 degree angle is achieved at the knee joint (mid-point).
- Once at the mid-point position, lower the sandbag back down to the start position in a slow controlled movement.

START:



MID-POINT:



14. HAMSTRING PENDULUM

- Assume the start position as indicated below, with one foot on a stump, chair or bench.
- Raise the body using the foot on the stump until the body is in a straight line (mid-point).
- From the midpoint position lower the body back down to the start position in a slow controlled movement.
- Perform the same number of repetitions with each leg.

START:



MID-POINT:



15. NORDIC CURLS

- This exercise is a partner assisted exercise. The partner's role is to stabilise the legs throughout the exercise by holding them down to the floor. If an alternative method is available to stabilise the legs in the desired position, it may be used.
- To start the exercise, lean slightly forward, keeping the back straight.
- Lower the body **as slow as possible**.
- The objective of this exercise is to resist the fall for as long as possible
- Both arms should be used, as shown in the pictures to buffer the fall once you are not able to resist the fall any longer.
- Once in the mid-point position, use the arms to push off to enable yourself to reach the kneeling starting position once again.

START:



MID-POINT:



ABDOMINAL EXERCISES:

1. SIT-UPS

- Assume the starting position as indicated below.
- Perform a sit-up until the elbows touch the knees (mid-point), briefly hold this position before returning to the start position.
- Do not jerk the arms to help start the exercise movement.
- Keep the neck in a straight neutral position throughout the exercise.

START:



MID-POINT:



2. SANDBAG SIT-UPS (IR)

- While assuming the start position, hold a sandbag above your head with arms slightly bent.
- From this start position, perform a sit-up as described above.
- Keep a constant degree of flexion in the elbow.
- Do not use the chest muscle to pull the sandbag, the sandbag should be lifted by the abdominal muscles while performing the sit-up.
- Keep the neck in a straight neutral position throughout the exercise.

START:



MID-POINT:



3. CRUNCHES

- Assume the starting position as indicated below, with feet on a stump, chair or bench. Alternatively, the feet may be held in the air while in the same position.
- Perform a crunch until the elbows touch the knees (mid-point), briefly hold this position before returning to the start position.
- Do not pull the neck forward with the hands.

START:



MID-POINT:



4. SANDBAG CRUNCHES

- Assume the start position as shown below and as described above for crunches.
- Place and hold a sandbag on the chest.
- Perform a crunch as explained above.

START:



MID-POINT:



5. PLANK HOLD

- Assume the position as shown below.
- Maintain this straight body position for the prescribed duration.
- Maintain a straight back and body throughout the exercise
- Ensure the feet hips and shoulders are in a straight line
- Avoid hollowing the back.



6. SANDBAG DIAGONAL SIT UPS (IR)

- Assume the starting position as indicated below.
- The sandbag is held above and to one side of the head.
- Pull the sandbag diagonally, from the start position, to the position shown below (mid-point)
- Perform the same number of repetitions from each side.

START:



MID-POINT:



7. TWIST CRUNCHES

- Assume the starting crunch position as indicated below (start).
- Crunch upwards with a twist, until one elbow touches the opposite knee (midpoint).
- Briefly hold this mid-point position before returning to the start position.
- Once the movement is performed on each side one repetition is complete
- Do not jerk the arms to help start the exercise movement.

START:



MID-POINT:

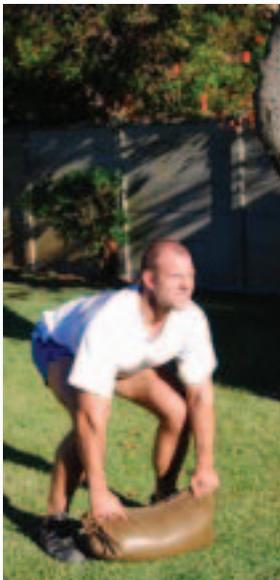


WHOLE BODY POWER EXERCISES

1. EXPLOSIVE SANDBAG CLEAN

- This power exercise involves pulling a sandbag quickly and forcefully from the ground to the front of the shoulders.
- Ensure a straight back throughout the movement. Do not bend the back at any stage.
- Start the movement with feet parallel and at shoulders width. Grip the sandbag in a firm grip, slightly wider than shoulder width.
- From this start position, pull the sandbag forcefully upwards and extend the hips and knees while plantar flexing the ankles. As the sandbag approaches shoulder height, bend the knees again into a squat position and “catch” the sandbag on the front of the shoulders.
- After the sandbag has been caught in the squat position, straighten the legs till upright.
- Lower the sandbag in a controlled manner to assume the start position again.

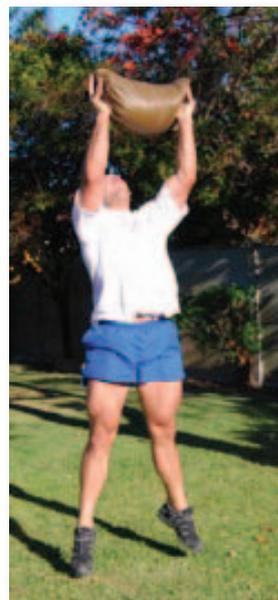
START:



2. EXPLOSIVE SANDBAG PRESS

- This power exercise involves pushing and throwing the sandbag as quickly and forcefully as possible, from the front of the shoulders upwards
- Start the movement with feet at shoulders width apart and ensure a solid grip on the sandbag, with all weight placed underneath it.
- From this start position, drive the weight upwards through extension of the hips and knees
- If possible, accelerate all the way through the movement and throw the sandbag as high as possible.
- Move out of the way and ensure that the sandbag does not drop on your head.
- Let the sandbag land and then repeat.

START:



3. EXPLOSIVE SANDBAG CLEAN AND PRESS

- This exercise combines the two exercises described above.
- A sandbag clean is performed, followed immediately by an explosive sandbag press.
- See instructions above for each component of the lift.

4. ONE-ARM SANDBAG SNATCH

- Grasp a sandbag in one hand with straight back, as shown in the start position below.
- Quickly and forcefully pull the sandbag upwards while attempting to throw the bag as high as possible.
- One may keep grip of the bag, or alternatively release it, move out of the way and ensure that the sandbag does not drop on your head.
- If 6 reps are prescribed, perform 3 reps holding the bag in your left hand and 3 reps holding the bag in your right hand.

START:



MID-POINT:



5. ROCK THROWS (HR)

- Grasp a rock with a firm grip while it is perched on the ground (start).
- Ensure that the feet are placed wide and either side of the rock, as to prevent the possibility of the rock dropping on your toe.
- While maintaining a straight back, attempt to propel the rock as far forward as possible
- Once the rock has been thrown, assume the start position again and repeat until the desired repetitions are achieved.
- **Progression or alternative:** If a large tractor tyre is available, this may be used instead of the rock. When performing this exercise with a tyre, assume a similar start position and flip the tyre in one (or two; depending on the size and weight of the tyre) movements.

START:



6. EXPLOSIVE ROCK PRESS (HR)

- In preparation for this lift, lift a rock off the ground into the start position, safe techniques previously described, i.e. straight back when lifting the rock, etc. should be used. The rock should not be too big to handle safely!
- Grasp a rock with a firm grip while holding it in front of the shoulders (start position).
- Ensure that the feet are placed wider than the rock, as to prevent the possibility of the rock dropping on your toe.
- From the start position, squat down, and then rapidly accelerate upwards and propel the rock forward.
- The objective of the exercise is to “throw” the rock as far as possible.
- Once the rock has been thrown, assume the start position again and repeat until the desired amount of repetitions are achieved.

START:



7. EXPLOSIVE ROPE PULL (IR)

- Attach a thick rope to any sled or weight you will be able to pull along the ground.
- Using one arm at a time, pull the weighted object towards yourself, as quickly as possible
- Start the exercise on your feet, and use the whole body to generate power to rapidly accelerate the weight.
- If the rope is not long enough, get up and retreat to the required distance and continue pulling.
- If the exercise is too easy, add additional weight.
- As opposed to the rope pull described in the back muscle exercises category, this is a whole body power exercise, the different body position for the explosive rope pull is shown below.

START:



MID-POINT:



8. EXPLOSIVE SLED PULL

- Attach a thick rope to any sled or weight you will be able to pull along the ground.
- Hold the rope over your shoulder and attempt to accelerate as much as possible.
- The objective of this exercise is to develop explosive leg power.
- The ideal body position is shown below.
- **Progression or alternative:** If a car is available (and driver to steer the car!) to use in a safe and appropriate area (i.e. large unused car-park), this may be used instead of a weighted sled. When performing this exercise, push (and not pull) the car from behind, using the same body position shown below (except for the arms and hands which will be pushing).

START:



MID-POINT:



9. SANDBAG LONG JUMP

- This is a power exercise and the objective is to jump as far forward as possible, while holding a sandbag.
- Assume the start position, while holding a sandbag in a cradle position, as shown below.
- From the start position, dip down, and then perform a standing “long jump”.
- When you land with the sandbag, flex the knees and hips to brace the landing.
- Return to the start position and repeat the desired number of repetitions.

START:



10. SANDBAG SQUAT JUMPS

- This is a power exercise and the objective is to jump as high as possible, while holding a sandbag on your shoulders, behind your neck.
- Assume the start position, while holding a sandbag on your shoulders and behind your neck, shown below.
- Ensure that the weight of the sandbag is on the shoulders and upper back, and is not resting on the neck.
- From the start position, squat down, and then perform an explosive jump.
- When you land with the sandbag, flex the knees and hips to brace the landing.
- Return to the start position and repeat the desired number of repetitions.

START:



11. SLED PUSH

- Assume the start position as shown in the picture below, with hands on a weighted sled or object/weight you will be able to push along the ground.
- Ensure your back is straight as per below while pushing the weight.
- Push the weight as quickly as possible while maintaining the correct body position shown below.

START:

