

CBRN OPERATOR



PRE-SELECTION
PHYSICAL FITNESS TRAINING PROGRAM

CANADIAN JOINT INCIDENT RESPONSE UNIT

CHEMICAL, BIOLOGICAL, RADIOLOGICAL, AND NUCLEAR OPERATOR

Pre-Selection Physical Fitness Training Program



1st EDITION
2016



CBRN OPERATOR
PRE-SELECTION PHYSICAL FITNESS TRAINING PROGRAM



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FOREWORD

The Special Operations Chemical, Biological, Nuclear, and Radiological (CBRN) Operator Pre-Selection Physical Fitness Training Program has been developed by the Canadian Forces Morale and Welfare Services (CFMWS) in conjunction with the Canadian Special Operations Forces Command (CANSOFCOM). The purpose of this manual is to help candidates to optimally prepare for the physical demands of the CBRN Operator Assessment Centre (AC). The CBRN Operator AC is a structured assessment process that evaluates performance while placing candidates under intense physical and mental stresses. High levels of personal physical fitness and motivation are critical to the successful completion of the AC. This training program is designed to assist you in reaching the high level of physical fitness required to complete the CBRN Operator AC.

This is an extremely strenuous training program. Prior to attempting this program, it is recommended that you successfully reach Level 1 in all of the Fitness Check exercises found on page 28. The CBRN Operator Pre-Selection Physical Fitness Training Program is an evidence-based training program that is derived from the physical demands of the CBRN Operator AC as well as the CBRN Operator occupation.

Reaching Level 1 in all of the Fitness Check exercises will ensure that you have an adequate base level of fitness to undertake this program. Pursuing it with inadequate fitness would put you at risk of serious injuries. If you are unable to achieve these standards, please consult your local PSP fitness staff and/or DFIT.ca for physical fitness programming prior to commencing this program.

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INTRODUCTION

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INTRODUCTION

The Canadian Joint Incident Response Unit's (CJIRU) mission is to provide specialized, timely and agile CBRN Defence response to the Government of Canada (<http://cjiru.mil.ca/index-eng.asp>). CBRN Operators are trained to assess and respond to CBRN threats at home and abroad. The CBRN Operator military occupational structure identification is open to Regular and Reserve personnel from the Canadian Army, Royal Canadian Navy and the Royal Canadian Air Force, through the annual voluntary occupation transfer program. CBRN Operators embody physical fitness, intelligence and adaptive attributes which are critical to operating in small groups within high risk, complex and volatile situations. CBRN Operators are employed within CJIRU, remaining deployable at short notice for both domestic and international incidents. CBRN Operators must be prepared to endure the rigors of common military operations as well as domestic response issues associated with CBRN hazard releases. Competency in land-centric tactical skills, in special operations skills, and in the conduct of special operations are necessary for CBRN Operators to enable appropriate response requirements.

All CBRN Operator candidates must complete a rigorous AC in order to be considered for the CBRN occupation. The CBRN Operator AC is designed to measure performance while placing candidates under physical and mental stresses in order to determine a candidate's suitability to undertake the CBRN 1 training course and ultimately be employed as a CBRN Operator. Thus, the physical demands placed on candidates during the AC reflect the actual job and training demands. This evidence-based physical fitness training program was developed to assist candidates in their physical preparation for the CBRN Operator AC.

PHYSICAL FITNESS COMPONENTS

The development of this evidence-based physical fitness training program is built on a rigorous scientific process that characterizes the requisite physical demands and determines the necessary physical fitness components. The physical fitness components identified as necessary for the successful completion of the CBRN Operator AC are:

Aerobic power (VO_{2peak}): The maximum rate that the body uses oxygen to fuel the work being done. It is also a critical component of the body's ability to recover during and following intense intermittent work and to endure repeated days of intense work.

Aerobic capacity: The ability to work at a reasonably high rate for a prolonged period of time. It reflects the endurance over hours and days and is an important component in tolerating heat stress and determining time on target when wearing personal protective clothing (PPC).

Anaerobic capacity: The ability to resist and tolerate the fatigue that occurs at very high rates of work extending from 1 minute (min) to over 5 min in duration.

Muscular strength: The ability of the muscles to exert force in specific movements and is very important in lifting, carrying, climbing, pushing and hauling. It is also important in preventing injuries.

Muscular endurance: The ability of the muscles to perform repeated contractions against light to moderate loads for extended periods of time.

Agility: The ability to change direction of the body rapidly and accurately.

Balance: Classified as either static or dynamic. Static balance is the ability to maintain total body equilibrium while standing in one spot. Dynamic balance involves the ability to maintain equilibrium while moving from one point to another.

CBRN Operators must wear PPC to protect themselves from hazards in their work environment. However, PPC presents physiological challenges to CBRN Operators as the protective nature of the clothing inhibits heat loss resulting in an uncompensable heat stress condition. An uncompensable heat stress condition is where the body stores heat which results in an elevated core temperature greatly increasing the risk of sustaining a heat illness. Uncompensable heat stress and an elevation in core temperature can adversely affect a CBRN Operator's time on target depending on their individual heat tolerance. This, in turn, adversely affects their ability to perform their job. An elevated level of aerobic capacity combined with low body fatness greatly increase heat tolerance and are important for performance for a CBRN Operator.

This CBRN Operator Pre-Selection Physical Fitness Training Program incorporates these physical fitness components and physiological challenges into the CANSOFCOM training model. The CANSOFCOM training model is comprised of physical, functional and operational training cycles. Physical training is devoted to developing general aerobic power/capacity, muscular strength and muscular endurance. Functional training focuses more on task specific abilities, complex lifts, load carriage, and the movement of the body in its natural patterns. It incorporates training methods that are similar to the actual movements, motor qualities and metabolic processes of the job. Operational training prepares candidates to complete operational tasks. It incorporates operational loads, speed of movement, duration, tempo, as well as focusing on the underlying neuromuscular requirements to perform these tasks. The 3 types of training are integrated into a 12-week training program designed to systematically elevate levels of fitness while managing physical/psychological fatigue and reducing the risk of injuries.

INJURY PREVENTION AND SAFETY

The sustainment of an injury during your preparation for the CBRN Operator AC could derail your training and negatively affect your ability to complete the AC. Many strategies for avoiding injuries and training safely involve common sense, being able to read your environment, and understanding your body. This section highlights some strategies to assist you with injury prevention and safety.

Check your health: You need to ensure that you are in good health to complete the program and to avoid any injury. All candidates should complete the Fitness for Operational Requirements of CAF Employment (FORCE) Health Appraisal Questionnaire (Refer to pg. 8).

Warm up /cool down: A warm up will increase muscle temperature, core temperature, and blood flow which will result in faster muscle contractions, increased rates of force development, improvement in muscle strength and power, increased oxygen delivery to working muscles, and enhanced metabolic reactions. In short, by warming up you will mentally and physically prepare yourself for your training session and get the most out of each and every training session. An effective warm up includes light activity such as 8–12 min of easy jogging followed by 8–12 min of movement preparation exercises (stretching). Cooling down after an intense training session is vital for your body's ability to recover from the stress that it just encountered. By completing a cool down and regeneration exercises after a training session, you allow the body to remove metabolic waste produced, heat, as well as deliver fluids and fuel to the muscle. This will enhance recovery and limit post training stiffness and soreness. An effective cool down consists of 10–15 min of light activity followed by 8-12 min of active regeneration (stretching) exercises. A structured movement preparation and regeneration can be found in Chapter 3 for your convenience.

Mobility: Body tissues become stiff and adaptively short through incorrect movement patterns and body positions adopted throughout the day, resulting in loss of range of motion and reductions in the ability to generate force. The human body will compensate for poor mobility allowing for function but at a physiological cost of additional wear and tear on tissues and joints as well as an increased risk of injuries. Mobility training can help to restore optimal function allowing full

physical capacities to be available at a moment's notice. Furthermore, good positioning and movement will: i) eliminate mechanical inefficiencies reducing the risk of overuse injuries; ii) deal with poor mechanics longer with less physiological cost; and iii) enhance the ability to generate forces and torques. Mobility training should be completed for a minimum of 15-20 min each day after the evening workout and should also be performed on the active recovery days following 10-15 min of light activity.

Injury management: Unfortunately injuries can occur that are beyond your control. If you do sustain an injury, it is crucial that you take immediate action to minimize damage and enhance healing. The RICE strategy outlined below will help to ensure that inflammation is reduced and that recovery and healing are initiated. It is always wise to seek medical attention as soon as possible after sustaining an injury or if a minor injury persists.

- **R**= Rest the injured body part.
- **I**= Ice the injured area for 10–20 min every 2–3 hours.
- **C**= Compress the injured area with an elastic bandage or a towel if swelling occurs.
- **E**= Elevate the injured area above the level of the heart.

Additionally, you should analyze what factor(s) led to the injury, adjust your training to prevent further injuries and, if necessary, pursue alternate forms of training. Please consult your medical staff or physical exercise specialist for an assessment, identification of any limitations and advice on alternative methods of training.

Train smart: Training smart incorporates using proper technique, protecting your back, training with a partner, taking care of your feet and legs and ensuring that equipment is safe.

- Proper technique: description of the correct technique for each exercise prescribed in this program, along with images, is included in Chapter 4 for your reference and guidance. Furthermore, one training session each week during weeks 2-5 of the training program is dedicated to practicing, reinforcing and learning correct lifting technique. Incorrect lifting technique can result in injuries. It is recommended to use a lighter load when attempting lifts that are new or that you are not experienced with. Remember

to breathe correctly when lifting, that is, exhale when you exert against a resistance and inhale during the less stressful phase of the exercise.

- Protect your back/spine: it is important to achieve and maintain an optimal position for your spine. You should try to achieve a straight spine prior to completing any movements, particularly when preparing to lift heavy objects. Brace your spine and core by using the following steps:
 - Screw your feet into the floor. Stand erect and externally rotate your hips by applying pressure to the floor with the feet and exert an outward force.
 - Engage your glutes. You do not need to achieve or maintain your glutes at full tension, just enough to set and maintain your pelvis in a neutral position.
 - Lock your pelvis and ribcage. Take a deep diaphragm (belly) breath while maintaining tension in the glutes.
 - Balance your ribcage over your pelvis. Exhale and tighten your abdominals and pull the ribcage down. You need at least 20% tension in your abdominals to set and maintain a braced core.
 - Set your head and shoulders. Spread your collar bones wide and externally rotate the shoulders (palms facing the front). Centre your head over your shoulders, look straight ahead and align your ears over your shoulders.
- Train with a partner: training with a partner can provide motivation and support, assistance if you sustain an injury and act as a "spotter" for when you are doing resistance exercises with free weights.
- Feet and legs: wear training shoes that are appropriate for the training that you are doing (i.e. running shoes for running etc.) and make sure that your footwear fits properly. Run on flat even surfaces like tracks, asphalt, or level grass.
- Equipment: check to make sure that equipment, benches etc., are stable and safe. Check the collars on free weights and make sure that dumbbells (DB) are secure. Finally, check the floor surface for clutter or slippery areas.

Pain: Sensations of discomfort or soreness are normal aspects of physical training. Sensations of acute pain are not. If you experience any sensations of sharp shooting pain at any time when completing any of the exercises in this program, stop that exercise immediately. It is recommended that you seek medical attention to determine the cause of the pain and consult you local PSP fitness staff for advice on replacing that exercise with a suitable alternative.

Avoid overtraining: With high volume of training like those prescribed in this program the potential for becoming “overtrained” is increased. Symptoms of overtraining include: chronic fatigue, indifference to training, insomnia, inability to concentrate on tasks, loss of appetite, unexplained weight loss, prolonged muscle aches, increases in soft tissue injuries and infections, increased resting heart rate (HR) after waking, and an inability to maintain performance. The best ways to avoid these states are to:

- Adhere to the rest and recovery schedules in the program.
- Use the fitness check week to only do the tests as indicated. This will help you unload from the previous training weeks.
- Make sure you are being properly nourished and hydrated.
- Establish good bedtime habits to ensure 8 hours of sleep per night.
- Minimize other stressors in your life to allow you to devote your energy to training and building the training effect. Use the counselling services available to you if you need help in dealing with problems.
- Get minor injuries such as abrasions, bruises, strains and cuts treated immediately.

HEALTH APPRAISAL QUESTIONNAIRE

<p>This questionnaire is a screening device to identify personnel for whom fitness evaluation and physical activity might be inappropriate at this time.</p>	<p>Yes No</p>
<p>1. To the best of your knowledge, do you have a medical condition or Medical Employment Limitation (MEL) which restricts you from participating in a maximal fitness evaluation or a progressive training program?</p>	<p><input type="checkbox"/> <input type="checkbox"/></p>
<p>2. Is there any other reason you would need to talk to a physician prior to your fitness evaluation or training program?</p>	<p><input type="checkbox"/> <input type="checkbox"/></p>
<p>3. Do you have a valid Periodic Health Assessment (PHA)? If "No", proceed to Blood Pressure.</p>	<p><input type="checkbox"/> <input type="checkbox"/></p>
Blood Pressure	
<p>Your pre-evaluation blood pressure is less than or equal to 150/100 mm Hg</p>	<p><input type="checkbox"/> <input type="checkbox"/></p>
<p><input type="checkbox"/> Your pre-evaluation blood pressure lies between 141/91 mm Hg and 150/100 mm Hg and is considered to be slightly above the normal range. It is recommended that you consult your MO.</p>	
<p>Name (<i>print</i>)</p>	<p>Date (yy/mm/dd)</p>
<p>Signature of CAF member</p>	

If you answered "Yes" to one or both of questions 1 & 2, it is recommended that you see your medical provider prior to attempting this program. If you answered "No" to question 3, please proceed to have your blood pressure measured by a medical provider or your local PSP fitness staff.

OPTIMAL PERFORMANCE STRATEGIES

In order to elevate your fitness level to the level that is necessary to complete the CBRN Operator AC, it will take more than just going to the gym and working hard. Optimal physiological gains are only achieved when other factors such as rest, recovery, hydration and nutrition are appropriately managed. Additionally, monitoring your HR will provide you with valuable information during your training sessions. Some strategies are outlined in this section to help you to achieve optimal physiological gains from your workouts.

Rest, recovery, hydration, and nutrition: Vital components of any training program are adequate rest, recovery, hydration, and nutrition. Insufficient rest, recovery, hydration, and nutrition can lead to sub-optimal physical gains, overtraining, and possible decreases in performance during the CBRN Operator AC. It is important to note that gains in physical fitness are achieved during rest. Rest and recovery days are built into the program in specific places to ensure that you are properly rested to optimize your training gains. In addition, you must ensure that you are fully re-hydrated, re-fueled, nourished, and getting approximately 8 hours of sleep per night. It is also a good idea to minimize other stressors in your life to allow you to devote your mental and physical energy to training.

Monitor your HR: As you exercise your HR increases in order to supply the working muscles with more oxygen and fuel to meet the demands of the physical exertion. By taking your HR during exercise, you know how hard you are working. This allows you to gauge the intensity of your training sessions and thus increase your effectiveness. If you are not working hard enough, then you can make an adjustment immediately to get the most out of your training session, or vice versa, if you are working too hard, you can decrease your intensity so that you are able to finish your session. You can take your HR by pressing gently on the side of your neck with your index and the middle finger until you feel a pulse (this may require moving your fingers around slightly). Simply count the number of pulses you feel on your finger over 15 seconds (sec) and multiply by 4. For example, 20 pulses for 15 sec equates to a HR of 80 beats per minute (bpm). Another reliable method to monitor your HR is by using a commercial HR monitor.

Talk to your supervisor: Time is the biggest obstacle that you will face when trying to complete the full 12-week training program. Speak with your supervisor and explain the program requirements. In some instances, supervisors will allow candidates to complete one of the two prescribed workout sessions during work hours while the second session is completed on your own time.

Talk to PSP fitness staff: After reading the manual, if you have questions or require assistance do not hesitate to talk to your local PSP fitness staff. They can assist you with the Fitness Checks, help you tailor the program to your specific needs, and coordinate group training sessions if there are a number of candidates from your unit participating in the AC.

Training in the heat and re-hydration: Prolonged intense physical activity (as prescribed in this manual), can result in heat illnesses such as exertional heat stroke and heat exhaustion. These conditions occur most frequently in hot and humid conditions, and can result in withdrawal from training, collapse during or soon after the end of the activity and cause damage to your internal organs. Some signs and symptoms of the onset of heat stress include: dizziness, disorientation, confusion, irritability, headache, loss of balance, profound fatigue, and hyperventilation. As your body temperature increases, you begin to sweat which results in fluid loss and can lead to dehydration. Dehydration reduces endurance exercise performance, decreases time to exhaustion, and increases body heat storage. Therefore, it is very important to replace your fluids (re-hydration) to prevent heat stress. Here are some strategies to assist you when you are training in the heat:

- Avoid training outdoors during the hottest time of the day – usually between 1100–1500 hours (hrs).
- Acclimatize yourself to the heat by completing short repeated bouts of exposure in the heat.
- Liberally apply waterproof 30+SPF sunscreen to all exposed areas.
- Make sure you are fully hydrated prior to each training session by drinking beverages slowly throughout the day and ensure that urine output is normal and clear.

- Re-hydrate at a rate of 0.4–0.8 liter (L) per hour during exercise. After exercise, consume 1.5 L of fluid for each kilogram (kg) of body weight lost during exercise.
- The best replacement fluids following exercise are electrolyte drinks with 4-8% carbohydrates, cool to cold in temperature, and in volumes of about 250 mL every 15 min.
- Avoid consumption of substances that cause dehydration such as alcohol, caffeine (coffee, tea, energy drinks) supplements (energy supplements), etc.

Fuel for fitness: This twice a day training program is very physically demanding. Therefore, it is vital that you nourish your body properly to be successful and get the greatest return for your training investment to have the necessary energy to train and the right nutrients to build the training effect. Here are some guidelines to get started:

- Eat a balanced diet: this may seem obvious, but it is the fundamental rule for a sound foundation to your performance and health. Take some time to read “Canada’s Food Guide to Healthy Eating” and the accompanying “Using the food Guide” (both publications are available through your PSP fitness staff). Then follow them.
- Focus on carbohydrates for fuel: for your aerobic, anaerobic, speed and strength workouts, the fuel which can limit your work capacity is carbohydrates. These are stored in muscle in limited amounts (as a compound called glycogen) and when they run out you are unable to continue to perform or train. So it is important prior to training, during training, and following training to replace this vital fuel. Carbohydrates come in many food forms and include:
 - Grains: cereals, pastas, breads and rice. These are especially beneficial in the hours prior to exercise, but are also helpful after.
 - Fruits and juices: oranges, apples, peaches, pears, grapefruits, berries and bananas. These are good prior to, during, and after exercise.

- Root vegetables: potatoes, sweet potatoes, and yams. When mashed, boiled, or baked these are especially good after exercise and most effective in the 2 hour window following your workout.
- Sugared electrolyte drinks: Gatorade or Powerade are great for re-hydrating during and following exercise and will help you to replace your carbohydrates. They lack other nutrients so be sure to consume the other components of a balanced diet.
- Eat protein: fish, poultry, lean beef, shellfish, eggs and cheese. It is an important part of your balanced diet. Protein provides the building blocks for new muscle and enzymes to provide energy.
- Eat lots of fresh vegetables: they provide vitamins, minerals, fuel and other nutrients for both health and high performance.
- Keep alcohol intake to a minimum: it is low in nutrients, high in calories, and impairs your mental performance. In addition, alcohol is very dehydrating and its detrimental effects can last for up to 48 hours.

In the fuel for training and recovery table (page 14) are additional tips for achieving adequate fuel for your body (Reproduced from the Army Fitness Manual, Land Forces Command). For further information, please see the Top Fuel for Top Performance website at <http://www.forces.gc.ca/health-sante/ps/hpp-pps/nw-mn/tf-bs-eng.asp>.

Performance enhancing supplements: The use of performance enhancing supplements is not recommended during training as their use is prohibited during the AC. In order to meet the additional caloric demands of the training program, it is recommended that candidates adhere to a balanced diet by consuming additional nutrients, calories, and fluids from whole foods.

Ruck marching: Long distance marching is a common cause of blisters and abrasions. To clean a blister, wash gently around it with soap and water, being careful not to break the skin. If unbroken, use a sterilized needle or knifepoint to prick the lower edge of the blister to remove fluid (to sterilize a needle or knifepoint, hold it in a flame). Do not remove the skin; cover the blister with an absorbent adhesive bandage or similar dressing, extending beyond the edge of the blister. After applying the dressing, lightly dust the outside of the dressing and entire foot with foot powder. Do not use too much foot powder since it can harden and become irritating. Foot powder lessens friction on the skin and prevents the raw edges of the adhesive plaster from adhering to socks. The adhesive plaster should be smooth so it can serve as a "second skin." Check the blister periodically for proper drying. After the blister has dried, remove the adhesive plaster. Carefully inspect the foot for other problem areas that are red and tender that may need the protection of an adhesive plaster. Cover abrasions and cuts on the foot with absorbent adhesive bandages for rapid healing.

FUEL FOR TRAINING AND RECOVERY

BEFORE EXERCISE		DURING EXERCISE		AFTER EXERCISE
WHEN	2-4 hrs before	lasting < 1 hr	lasting > 2 hrs	0-2 hrs after exercise
GOAL	Provide energy and prevent dehydration and hunger during exercise	Stay hydrated	Stay hydrated and provide energy	Replace fluids and rebuild carbohydrate stores and repair muscles
FLUIDS	Drink about 300-600 mL (1-2½ cup) Tip: Urine amount and color is a good indication of hydration status. Aim for pale yellow!	Drink water to thirst	Drink about 150 to 350 mL (½-1½ cup) every 15-20 min (0.5-1.5 L per hour of exercise)	Drink fluid as soon as possible Tip: Drink 1.5 L of fluid for every 1 kg weight loss during exercise
FOOD	Eat a balanced meal rich in carbohydrate with some protein and low in fat	Not needed	Add a source of carbohydrate and minerals If needed, easily digested foods high in carbohydrates	<ul style="list-style-type: none"> • Eat a snack as soon as possible • Eat a meal containing carbohydrate and protein
SUGGESTIONS	Meal Suggestions <ul style="list-style-type: none"> • Rice, vegetables, lean meat and milk • Pasta, tomato/lean meat sauce, apple sauce, milk • Lean meat sandwich and juice • Pancakes with fruit, yogurt and nuts Snack Suggestions <ul style="list-style-type: none"> • Smoothie using fruit, milk, soy milk, or yogurt • Chocolate milk • Pita with hummus and vegetable juice • A slice of bread with peanut butter and milk • Low-fat muffin and fruit yogurt 	Sport drink (commercial or homemade): <ul style="list-style-type: none"> • Carb concentration of 4-8% (40-80 g carb per litre of fluid) • Sodium intake of 0.5-0.7 g (¼ tsp salt) sodium per litre fluid Water with carbohydrate foods: <ul style="list-style-type: none"> • Fruit (e.g. bananas, oranges, dates) • Granola bars, cookies, candies, bagels • Special sport gels, bars or candies 	Snack Suggestions <ul style="list-style-type: none"> • Bagel and chocolate milk or yogurt • Sandwich and juice • Granola bar and juice or yogurt drink Meal Suggestions <ul style="list-style-type: none"> • Pasta with tomato sauce, cheese and a salad • Chicken and vegetable rice, fruit salad and milk • Tuna sandwich, raw veggies and a glass of milk • Chili, bread and milk 	
<p>Tip: The tolerance is individual and depends on the type/intensity of exercise (marching vs. running). Avoid trying new foods or drinks before or during competition or rucksack march.</p>				

CBRN OPERATOR

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PHYSICAL FITNESS
TRAINING PROGRAM

CBRN OPERATOR
PRE-SELECTION PHYSICAL FITNESS TRAINING PROGRAM



PHYSICAL FITNESS TRAINING PROGRAM

This 12-week evidence-based training program was designed to assist you in elevating your fitness levels so that you reach Level 3 in all of the Fitness Check exercises as shown on **Table 3 - Fitness Checks** on page 28. Following this program will help you reach your goal of being physically prepared for the CBRN Operator AC. In order for you to begin this training program, it is highly recommended that you achieve a minimum of Level 1 in each of the Fitness Check exercises (page 28). If you have not reached Level 1, please contact your local PSP fitness staff or DFIT.ca for physical fitness programming prior to commencing this program.

Table 1 provides an overview of the training program. Full details of each training session are included in **Table 2 - Training Prescription** on pages 20-22.

TABLE 1 – TRAINING PROGRAM AT-A-GLANCE

	DAY 1	DAY 2	DAY 3	DAY 4	DAY 5	DAY 6	DAY 7
WEEK 1	FC	FC	FC	RRM	FC	FC	RD
WEEK 2	TD	TD	TD	RRM	TD	TD	TD
WEEK 3	RD	TD	TD	TD	RRM	TD	TD
WEEK 4	TD	RD	TD	TD	TD	RRM	TD
WEEK 5	TD	TD	RD	TD	TD	TD	RD
WEEK 6	FC	FC	FC	RRM	FC	FC	RD
WEEK 7	TD	TD	TD	RRM	TD	TD	TD
WEEK 8	RD	TD	TD	TD	RRM	TD	TD
WEEK 9	TD	RD	TD	TD	TD	RRM	TD
WEEK 10	TD	TD	RD	TD	TD	TD	RD
WEEK 11	FC	FC	FC	RRM	FC	FC	RD
WEEK 12	TA	TA	TA	RRM	TA	TA	RD

FC = Fitness Check

TD = Training Day

RRM = Rest/Recovery/Mobility Day

RD = Rest/Recovery Day

TA = Taper Day

PROGRAM FORMAT

This training program is built on a modified block periodization scheme using a 4:1 training week to unloading week ratio. The unloading week is also a Fitness Check week designed to provide you with a means to “self-assess” your fitness level and monitor your progression throughout the program.

The training weeks are broken down into 3 days of training followed by 1 day of rest, recovery, and/or mobility. These recovery days are crucial to your program as they allow you to build your fitness, resist overtraining, reduce the risk of injuries, and ensure that the quality of training is maintained.

Each 3-day training micro-block is focused on either: (i) strength - physical or metabolic training; (ii) strength - functional or metabolic training; or (iii) operational training. Each micro-block also includes supplemental training in the fitness components that are not the main focus. For example, if the block focuses on strength - physical, it is supplemented with functional metabolic components.

Physical training (either strength or metabolic) is characterized by relatively high volume and low intensity whereas functional training is characterized by relatively low volume and high intensity. Operational training mimics operational tasks including load, speed, and duration.

The first meso-block (week 2-5) of training focuses on physical fitness whereas the second meso-block (week 7-10) of training focuses on functional training.

The final week is a taper week designed to still stimulate a training effect while reducing the amount of mental and physical fatigue. This will allow you to be in peak physical form prior to the AC.

This program is meant to be used as a guide on your path to prepare physically for the CBRN Operator AC. It is highly recommended that you follow the **Table 2 - Training Prescription** as closely as possible to avoid injuries, avoid overtraining, avoid undue physical and mental fatigue, and obtain optimal gains in physical performance.

If you are having trouble finishing workouts, you miss workouts in any week, your Fitness Checks are not increasing, or you can't reach Fitness Check levels, you can repeat the previous training week or consult your local PSP fitness staff. Keep in mind that this will increase your overall preparation time.



CBRN OPERATOR
PRE-SELECTION PHYSICAL FITNESS TRAINING PROGRAM

TABLE 2 – TRAINING PRESCRIPTION (1/3)

	DAY 1	DAY 2	DAY 3	DAY 4	DAY 5	DAY 6	DAY 7
WEEK 1	Anaerobic / Strength Check AM: 400 m Run PM: Relative Hand Grip	Endurance Check AM: Pull-Ups PM: Sit-Ups	Aerobic Check AM: 2400 m Run PM: easy jog, mobility	Active Recovery (easy jog) and Mobility	Endurance Check AM: Squats PM: Bench Press	Aerobic Check AM: 5 km Run PM: mobility	REST
WEEK 2	AM: STRENGTH Physical Session I or II 15 RM, 3 sets, 13, 12, 10 PM: AEROBIC INTERVALS Functional 50 min, 1:1.5 (60 sec)	AM: RUCK MARCH Functional 15 kg, 3 km PM: MUSCULAR INTERVALS Physical Reps 18, 15	AM: STRENGTH Physical Session I or II 12 RM, 3 sets, 10, 10, 8 PM: TEMPO RUN Functional 15 min (85% max)	Active Recovery (easy jog) and Mobility	AM: PLYO / TECHNICAL Functional Session I PM: AEROBIC INTERVALS Physical 5 km, 1:1.2 (60 sec)	AM: SWIMMING Physical 700 m, tread water for 3 x 2 min PM: MUSCULAR INTERVALS Functional Reps 8, 6	AM: STRENGTH Functional Session I or II 8 RM, 2 sets, reps 6, 6 PM: AEROBIC CONTINUOUS Physical 45 min (Zone 1)
WEEK 3	REST	AM: STRENGTH Physical Session I or II 15 RM 3 sets, 12, 12, 12 PM: AEROBIC INTERVALS Functional 18 min, 1:2 (60 sec)	AM: RUCK MARCH Functional 15 kg, 3.5 km PM: MUSCULAR INTERVALS Physical Reps 20, 15	AM: STRENGTH Physical Session I or II 10 RM, 3 sets, 8, 8, 8 PM: TEMPO RUN Functional 20 min (85% max)	Active Recovery (easy jog) and Mobility	AM: PLYO / TECHNICAL Functional Session I PM: AEROBIC INTERVALS Physical 5 km, 1:1.5 (60 sec)	AM: SWIMMING Physical 600 m, tread water for 2 x 5 min PM: MUSCULAR INTERVALS Functional Reps 8, 6
WEEK 4	AM: STRENGTH Functional Circuit I or II 2 min PM: AEROBIC CONTINUOUS Physical 55 min (Zone 1)	REST	AM: STRENGTH Physical Session I or II 12 RM 3 sets, 10, 10, 10 PM: AEROBIC INTERVALS Functional 15 min, 1:1 (60 sec)	AM: RUCK MARCH Functional 15 kg, 4 km PM: MUSCULAR INTERVALS Physical Reps 20, 18	AM: STRENGTH Physical Session I or II 18 RM, 3 sets, 15, 15, 15 PM: TEMPO RUN Functional 15 min (90% max)	Active Recovery (easy jog) and Mobility	AM: PLYO / TECHNICAL Functional Session I PM: AEROBIC INTERVALS Physical 5 km, 1:1 (60 sec)
WEEK 5	AM: STRENGTH Functional Session I or II 8 RM, 2 sets, 7, 6 PM: AEROBIC CONTINUOUS Physical 50 min (Zone 1)	AM: STRENGTH Functional Session I or II 8 RM, 2 sets, 7, 6 PM: AEROBIC CONTINUOUS Physical 50 min (Zone 1)	REST	AM: TEMPO RUN Operational 25 min (85% max)	AM: LOADED CIRCUIT Operational 8 reps, 2 rounds	AM: RUCK MARCH Operational 20 kg, 5 km	REST

CBRN OPERATOR
PRE-SELECTION PHYSICAL FITNESS TRAINING PROGRAM

TABLE 2 – TRAINING PRESCRIPTION (2/3)

	DAY 1	DAY 2	DAY 3	DAY 4	DAY 5	DAY 6	DAY 7
WEEK 6	Anaerobic / Strength Check AM: 400 m Run PM: Relative Hand Grip	Endurance Check AM: Pull-Ups PM: Sit-Ups	Aerobic Check AM: 2400 m Run PM: easy jog, mobility	Active Recovery (easy jog) and Mobility	Endurance Check AM: Squats PM: Bench Press	Aerobic Check AM: 5 km Run PM: mobility	REST
WEEK 7	AM: STRENGTH Functional Session I or II 8 RM, 3 sets, reps: 6, 5 PM: AEROBIC INTERVALS Physical 4 km, 2:1 (60 sec)	AM: RUCK MARCH Functional 20 kg, 5 min PM: SWIMMING Physical 600 m, tread water for 3 x 2 min	AM: STRENGTH Functional Circuit I or II 2 rounds, 1:30 min PM: TEMPO RUN Physical 5 km (80-85% max)	Active Recovery (easy jog) and Mobility	AM: STRENGTH Physical Session I or II 15 RM, 2 sets, reps: 12, 12 PM: PLYO / ANAEROBIC INTERVALS Functional 4 (60 sec), 4 (30 sec), 4 (15 sec)	AM: SWIMMING INTERVALS Functional 400 m, 2:1 (60 sec) PM: MUSCULAR INTERVALS Physical Reps 12, 10	AM: STRENGTH Physical Session I or II 12 RM, 2 sets, reps: 10, 10 PM: AEROBIC INTERVALS Functional 3 km, 0.5 :1 (60 sec)
WEEK 8	REST	AM: STRENGTH Functional Session I or II 10 RM, 3 sets, reps: 8, 8, 8 PM: AEROBIC INTERVALS Physical 4 km, 1.5:1 (60 sec)	AM: RUCK MARCH Functional 20 kg, 5.5 km PM: SWIMMING Physical 600 m, tread water for 3 x 5 min	AM: STRENGTH Functional Circuit I or II 2 rounds, 2 min PM: TEMPO RUN Physical 5 km (80-90% max)	Active Recovery (easy jog) and Mobility	AM: STRENGTH Physical Session I or II 18 RM, 2 sets, reps: 15, 15 PM: PLYO / ANAEROBIC INTERVALS Functional 3 (60 sec), 3 (30 sec), 6 (15 sec)	AM: SWIMMING INTERVALS Functional 400 m, 1:3:1 (60 sec) PM: MUSCULAR INTERVALS Physical Reps 12, 10
WEEK 9	AM: STRENGTH Physical Session I or II 13 RM, 2 sets, reps: 13, 12 PM: AEROBIC INTERVALS Functional 2.5 km, 0.5:1 (60 sec)	REST	AM: STRENGTH Functional Session I or II 6 RM, 3 sets, reps: 5, 4, 3 PM: AEROBIC INTERVALS Physical 5 km, 2:1 (60 sec)	AM: RUCK MARCH Functional 20 kg, 6 km PM: SWIMMING Physical 600 m, tread water for 5 x 2 min	AM: STRENGTH Functional Circuit I or II 3 rounds, 1 min PM: TEMPO RUN Physical 3 km (90-95% max)	Active Recovery (easy jog) and Mobility	AM: STRENGTH Physical Session I or II 13 RM, 2 sets, reps: 12, 10 PM: PLYO / ANAEROBIC INTERVALS Functional 2 (60 sec), 4 (30 sec), 6 (15 sec)

TABLE 2 – TRAINING PRESCRIPTION (3/3)

	DAY 1	DAY 2	DAY 3	DAY 4	DAY 5	DAY 6	DAY 7
WEEK 10	<p>AM: SWIMMING INTERVALS Functional 400 m (1:1 [60 sec])</p> <p>PM: MUSCULAR INTERVALS Physical Reps 12; 10</p>	<p>AM: STRENGTH Physical Session I or II 12 RM, 2 sets, reps, 10, 8</p> <p>PM: AEROBIC INTERVALS Functional 4 km 1 :1 [60 sec]</p>	REST	<p>TEMPO RUN Operational 35 min (85% max)</p>	<p>LOADED CIRCUIT Operational 8 reps, 2 rounds</p>	<p>RUCK MARCH Operational 25 kg, 6 km</p>	REST
WEEK 11	<p>Anaerobic / Strength Check AM: 400 m Run PM: Relative Hand Grip</p>	<p>Endurance Check AM: Pull-Ups PM: Sit-Ups</p>	<p>Aerobic Check AM: 2400 m Run PM: easy jog, mobility</p>	<p>Active Recovery (easy jog) and Mobility</p>	<p>Endurance Check AM: Squats PM: Bench Press</p>	<p>Aerobic Check AM: 5 km Run PM: mobility</p>	REST
WEEK 12	<p>STRENGTH Physical Session I or II 15 RM, 2 sets, reps 12, 12</p>	<p>TEMPO RUN Physical 5 km (80-85% max)</p>	<p>RUCK MARCH Functional 20 kg, 5 km</p>	<p>Active Recovery (easy jog) and Mobility</p>	<p>STRENGTH Functional Session I or II 8 RM, 2 sets, reps 6, 6</p>	<p>AEROBIC INTERVALS Functional 3 km, 0.5 :1 [60 sec]</p>	REST

FITNESS CHECK WEEKS

The purpose of the Fitness Check weeks are to assist you in evaluating your current level of fitness in order to ensure that your training is progressing adequately for the successful completion of the CBRN Operator AC. They are also used throughout the program as unloading weeks where the overall volume of work is lower compared to training weeks. This will help to facilitate optimal recovery and gain in each physical fitness component.

This is an extremely strenuous physical training program. Prior to attempting it, it is recommended that you successfully reach Level 1 in all of the Fitness Check exercises in this section. Pursuing this program without an adequate base level of fitness will put you at risk of serious injuries. If you are unable to reach Level 1 in all of the Fitness Check exercises, it is highly recommended that you consult your local PSP fitness staff and/or DFIT.ca for physical fitness programming prior to commencing this program.

The following fitness components are assessed using the indicated tests. The testing schedule for the Fitness Check weeks (day and time) is presented in **Table 2 - Training Prescription** on pages 20-22.

Grip Strength
Relative Hand Grip

**Lower Body Muscular
Endurance**
Squats

**Upper Body Muscular
Endurance**
Bench Press
Pull-Ups

**Abdominal Core Muscular
Endurance**
Sit-Ups

Anaerobic Capacity
400 m Run

Aerobic Power
2400 m Run

Aerobic Capacity
5 km Run

CHECKING YOUR MUSCULAR STRENGTH

Using **Table 3 - Fitness Checks** on page 28, determine your level on each of the 8 fitness exercises and record your score and level (time, weight, distance) in **Table 4 - Progress Report**. This will allow you to evaluate your performance and identify areas where you need to improve to reach Level 3.

Detailed instructions on how to complete each of the 8 fitness exercises are explained with images in this section.

NOTE: ENSURE THAT YOU PREPARE YOURSELF PROPERLY PRIOR TO EACH TEST BY COMPLETING A WARM UP AND THE MOVEMENT PREPARATION.

GRIP STRENGTH

Relative Hand Grip



Note: This test requires a digital hand dynamometer, therefore assistance from local PSP fitness staff will be required to complete this fitness check.

- Stand with both feet flat on the floor, testing arm in front of the body (without touching) elbow flexed at 90°, forearm neutral (thumb pointed upwards), hand grasping the dynamometer.
- Apply force to the dynamometer by gripping with a single forceful maximal effort. The hand, arm, or dynamometer must not touch the body.
- Complete the test on both hands alternatively with a 1 min rest between trials. Two trials per hand are permitted with the best score for each hand (to the nearest kg), recorded and summed together.

Note: The relative hand grip value is then obtained by taking the combined handgrip (best of left and right hands) reported in kg and dividing the value by your total body mass (in kg) + 20 kg.

CHECKING YOUR MUSCULAR ENDURANCE

LOWER BODY MUSCULAR ENDURANCE

Squats



- Stand with feet shoulder width apart, toes pointing forwards, back erect, and head in a neutral position.
- Squeeze the shoulder blades together creating a shelf for the barbell.
- Screw the feet into the floor, engage the glutes and abdominals to brace the core, and imagine bending the barbell with the hands creating a stable upper body position.
- Squat down until the thighs are parallel to the floor while maintaining a neutral head position and knees aligned over the feet.
- Return to the starting position by pressing the feet into the floor, extending the hips and knees while maintaining the integrity of the upper body.

Note: Prior to the test, complete the movement preparation using a light load (i.e. 5-6 repetitions (reps) at 50% of the testing load), then start the test with a load of 80 kg. If this lift can be completed comfortably, complete as many reps as possible, if not then drop down to 72 kg for the Fitness Check. If 20 reps at 80 kg can be successfully completed, then increase the load to 90 kg for the next Fitness Check and so forth. Work with a partner to ensure safety.

UPPERBODY MUSCULAR ENDURANCE



Bench Press

- Lie on a bench with feet flat on the floor, hips, shoulders and head in contact with the bench.
- Grasp the barbell with an overhand grip slightly wider than shoulder width apart.
- Engage the glutes and abdominals to brace the core.
- Lift the load above the chest with arms fully extended.
- Lower the barbell to approximately 2 centimeter (cm) above the chest.
- Push the barbell back up to the starting position.



Note: Prior to the test, complete the movement preparation and start the test with a 70 kg load. If this can be completed comfortably, continue and do as many reps as possible, if not then drop down to 60 kg for the Fitness Check. If 20 reps at 70 kg can be successfully completed, then increase the load to 80 kg on the next Fitness Check and so forth. Work with a partner to ensure safety.



Pull-Ups

- Grasp the bar with an overhand grip slightly wider than shoulder width apart.
- Hang with arms fully extended and knees flexed and ankles crossed.
- Pull the ribcage down to brace the core.
- Pull up until the chin is above the bar while maintaining a neutral head position.
- Lower down to the starting position in a slow controlled manner maintaining the integrity of the body.
- Pause momentarily at the bottom to ensure that you do not swing or kip.

Note: Record the number of pull-ups completed without stopping. Do not rush; perform the pull-ups smoothly.

ABDOMINAL CORE MUSCULAR ENDURANCE

Sit-Ups



- Lie supine on the floor with the feet on the floor, knees bent to 90°, hands behind ears, and elbows pointed forwards.
- Keep the elbows pointed forwards, feet in contact with the floor and hands touching the head, sit-up so that the elbows touch the top of the knees.
- Return to the starting position ensuring that the shoulder blades make contact with the ground.

Note: Complete as many as possible in 1 min.

CHECKING YOUR ANAEROBIC CAPACITY

ANAEROBIC CAPACITY

400 m Run

- It is convenient to use a 400 m track but a measured distance on a flat running surface is also good.

Note: Be sure to complete a proper warm up prior to the run.

CHECKING YOUR AEROBIC FITNESS

AEROBIC POWER

2400 m Run

- This equates to 6 laps of a 400 m track or measure out the distance on a flat course. Pace yourself to achieve your best average speed.

AEROBIC CAPACITY

5 km Run

- This can be run over a flat measured course or 12.5 laps of a 400 m track. To achieve the best average speed, select an appropriate pace and maintain it throughout the duration of the run.

TABLE 3 – FITNESS CHECKS

FITNESS EXERCISES	LEVEL 1	LEVEL 2	LEVEL 3
RELATIVE HAND GRIP	≥ 1.00	1.01-1.15	≥ 1.16
SQUATS (reps)			
72 kg	11 - 15	16 - 21	22 +
80 kg	6 - 10	11 - 15	16 +
90 kg	1 - 4	5 - 9	10+
BENCH PRESS (reps)			
60 kg	13 - 15	16 - 18	19 +
70 kg	11 - 13	14 - 16	17 +
80 kg	9 - 11	12-14	15 +
PULL-UPS (reps)	5 - 8	9 - 12	13 - 17
SIT-UPS (reps)	40 - 44	45 - 49	50 - 54
400 m RUN (min:sec)	1:53 - 1:46	1:45 - 1:38	1:37 - 1:32
2400 m RUN (min:sec)	11:18 - 10:27	10:26 - 9:44	9:43 - 9:04
5 km RUN (min:sec)	23:33 - 21:48	21:47 - 20:15	20:14 - 18:52

TABLE 4 – PROGRESS REPORT

FITNESS EXERCISES	WEEK 1		WEEK 6		WEEK 11	
	SCORE	LEVEL	SCORE	LEVEL	SCORE	LEVEL
RELATIVE HAND GRIP						
SQUATS (reps)						
72 kg						
80 kg						
90 kg						
BENCH PRESS (reps)						
60 kg						
70 kg						
80 kg						
PULL-UPS (reps)						
SIT-UPS (reps)						
400 m RUN (min:sec)						
2400 m RUN (min:sec)						
5 km RUN (min:sec)						

CBRN OPERATOR
PRE-SELECTION PHYSICAL FITNESS TRAINING PROGRAM



CBRN

OPERATOR



**TRAINING PROGRAM
EXERCISES**

CBRN OPERATOR
PRE-SELECTION PHYSICAL FITNESS TRAINING PROGRAM



STRENGTH TRAINING

The purpose of strength training is to ensure that you have adequate levels of muscular strength and endurance to successfully complete the CBRN Operator AC. Muscular strength and endurance are trained in the physical, functional, and operational training cycles. To induce the specific physiological adaptations for each type of strength, the way in which strength is trained during each cycle varies. The modes of training include rest priority, time priority, and task priority.

- Rest priority training is similar to traditional resistance training whereby a set of reps is followed by a designated rest period. The most important variable to manipulate is the duration of the rest period. Specific rest periods allow for and enhance specific physiological adaptations. This priority of training is the main modality of training incorporated in the Physical training. It is also found throughout the Functional training.
- Time priority training sets a time limit to the training session whereby as many reps as possible are performed in the given time. The exercises are completed in a circuit type fashion with very little rest given during rounds of the circuit. The critical variable that is manipulated here is time. This type of training is incorporated in the Functional training.
- Task priority training requires to complete the tasks as quickly as possible (while maintaining safety). The exercises are completed in a circuit type fashion with very little rest taken between exercises. The crucial variable that is manipulated in this type of training is the tasks or exercises (movement patterns of tasks, heights of lifts, weights of lifts, number of lifts, etc.). This type of training is predominantly found in the Operational training.

General instructions

- Complete the strength training sessions on the required days and times as indicated in **Table 2 - Training Prescription** on pages 20-22.
- The required sets and reps are indicated in Table 2 where the intensity is indicated by repetition maximum (RM) for each strength training session. For example, "Strength (15 RM)" means

that you choose a load heavy enough that you can only complete 15 reps of the exercise. If you are able to complete more than 15 reps, the load is too light, and if you are unable to complete 15 reps, the load is too heavy.

- Complete the prescribed number of reps on both sides of the body for uni-lateral (one side of the body) exercises such as single leg (SL) squats.
- Circuit training sessions are to be completed with minimal rest between exercises. Recover for 2-5 min between rounds.
- If a specific exercise feels uncomfortable, you can substitute a similar exercise from one of the other training sessions in the same phase (i.e. Physical exercise for Physical exercise). For example, you may substitute goblet squats for box squats.
- Use the description and pictures found in Chapter 4 - Exercise Description for each exercise as a guide to make sure that you are using proper technique.
- If you are having trouble mastering the proper technique for any exercise, please consult your local PSP fitness staff for guidance and assistance.
- Do not sacrifice proper technique in order to increase the training load.

Physical exercises

- Physical exercises are derived from 7 categories: Squat, Hinge, Lunge, Press, Pull, Push, and Grip.
- Physical training sessions are completed in a traditional manner; complete a set of an exercise then rest for a pre-determined amount of time then move on to the next set in the same exercise. Once all of the prescribed sets for the exercise are completed, move on to the next exercise.
- Physical training sessions are comprised of 2-3 sets of 8-15 reps for 9 different exercises, as shown in Table 5.
- To induce the appropriate physiological adaptations, it is important that you rest for 1-1.5 min between sets.

TABLE 5 – PHYSICAL EXERCISES

PHYSICAL SESSION I		PHYSICAL SESSION II	
Category	Exercise	Category	Exercise
Squat	Goblet Squats	Squat	Box Squats
Hinge	Pull Through	Hinge	Romanian Deadlifts
Lunge	Lunges	Lunge	Bulgarian Split Squats
Press	½ Kneeling Press	Press	Kneeling Press
Pull	Pull-Ups	Pull	Chin-Ups
Push	DB Push-Up to Row	Push	Bench Press
Pull	Inverted Rows	Pull	DB Row to Bench
Grip	Plate Pinch Deadlifts	Grip	Plate Pinch Deadlifts
Grip	Top Grip DB Farmer's Walk	Grip	Top Grip DB Farmer's Walk

Functional exercises

- Functional exercises are derived from 7 categories: Combination, Squat, Hinge, Lunge, Pull, Push, and Grip.
- Functional training is broken down into sessions and circuits.
- Functional sessions are completed in a traditional manner whereas circuits are completed in a circuit format.
- Functional sessions are comprised of 2-3 sets of 4-8 reps for 7 different exercises as shown in Table 6.
- To induce the appropriate physiological adaptations, it is important that you rest for 2-5 min between sets.
- Functional circuits are comprised of 1-3 rounds of the circuit while completing as many reps as possible of each exercise for 1-2 min as shown in Table 7.
- To induce the appropriate physiological adaptations, it is important that you complete all of the exercises as quickly as possible, with minimal rest in between without sacrificing technique. If you cannot maintain proper technique slow down otherwise you will increase your risk of sustaining an injury.

- Make sure that you rest for a minimum of 2-5 min between rounds of the circuit.

TABLE 6 – FUNCTIONAL EXERCISES

FUNCTIONAL SESSION I		FUNCTIONAL SESSION II	
Category	Exercise	Category	Exercise
Combination	Thrusters	Combination	Sumo Deadlift to High Pull
Squat	Front Squats	Squat	Squats
Hinge	Deadlifts	Hinge	Sumo Deadlifts
Pull	Bent Over Rows	Pull	Barbell T-Bar Rows
Push	SA DB Bench Press	Push	DB T-Push-Ups
Grip	Towel Inverted Rows	Grip	Towel Inverted Rows
Grip	SA Barbell Deadlifts	Grip	SA Barbell Deadlifts

- Functional Circuit I – Rucksack: pack a rucksack (or backpack) so that it weighs 15 kg. Use the rucksack as the load for your circuit.
- Functional Circuit II – Kettlebell: you need 2 kettlebells to complete this circuit.

TABLE 7 – FUNCTIONAL CIRCUITS

FUNCTIONAL CIRCUIT I - RUCKSACK		FUNCTIONAL CIRCUIT II - KETTLEBELL	
Category	Exercise	Category	Exercise
Combination	Squat and Press	Combination	Floor to Wall Touches
Pull	DB Row on Bench	Press	SA Kettlebell Press
Hinge	SL Deadlifts	Squat	Suitcase Squat and Carry
Push	Push-Ups Wearing Ruck	Pull	Inverted Row
Squat	Rucksack Squat	Lunge	Kettlebell Step-Ups
Press	Military Press	Push	T-Push-Ups
Grip	Rucksack Suitcase Carry	Hinge	Kettlebell Swings
Lunge	Reverse Lunges	Grip	SA Kettlebell Deadlift

Operational exercises

- Operational exercises are grouped into 6 categories: Combination, Squat, Hinge, Lunge, Pull, and Push.
- Operational training sessions are comprised of a loaded circuit as shown in Table 8. The amount of reps and number of rounds are indicated in **Table 2 - Training Prescription** on pages 20-22.
- A weighted vest (10kg) is worn for the completion of the circuit.
- You need 2 sandbags (20 kg), a FORCE Drag Kit, and a box to complete this circuit.
- You need a 10 m area to complete the FORCE Drag, Farmer’s Walk, and Sandbag (SB) Push.

TABLE 8 – OPERATIONAL CIRCUIT

Category	Exercise
Lunge	SB Step-Ups
Pull	FORCE Drag
Squat / Grip	SB Squat and Carry
Push	SB Push on Floor
Hinge	SB SL Deadlift
Combination	SB Lift to Box

CORE TRAINING

The purpose of the core training is to ensure that your core strength and endurance are adequate to complete the CBRN Operator AC. Core training is completed following the strength training sessions. The core training session mimics the strength training session that precedes it for type (physical/functional), sets, reps, etc. The core training exercises are selected to induce the appropriate physiological adaptations for each specific type of training. Core training sessions are either isometric (static or postural centric) or isokinetic (dynamic or movement centric).

- Core training exercises are performed in multiple planes of motion with various bases of support as shown in Table 9.
- Complete the prescribed number of reps on both sides of the body for uni-lateral (one side of the body) exercises.
- Detailed descriptions of each exercise are located in Chapter 4 - Exercise Description for your convenience.

TABLE 9 – PHYSICAL AND FUNCTIONAL CORE EXERCISES

PHYSICAL	
Static	Dynamic
Plank	Dead Bug
Supine Bridge	Bird Dog
Side Plank	Suitcase Carry
T-Stabilization	Kneeling Pallof Press
FUNCTIONAL	
Static	Dynamic
3-Point Plank	Stir the Pot
SL Supine Bridge	Roll Out
Side Plank with Knee Tuck	Bottom Up Walk
DB T-Stabilization	½ Kneeling Chop

METABOLIC TRAINING

The purpose of the metabolic training is to ensure that you have the requisite metabolic capacities in order to complete the CBRN Operator AC. Metabolic training is trained for physical, functional, and operational capacities. To induce the specific physiological adaptations for each type of metabolic process, the way in which it is trained varies. The types of training include aerobic continuous, tempo run, and interval training (aerobic and anaerobic).

General instructions

- Complete the training sessions on the required days and times as indicated in **Table 2 - Training Prescription** on pages 20-22.
- The required distance, duration, and intensity are indicated in Table 2 for each metabolic training session.
- Training intensity is depicted as either absolute (time based) or relative (HR based). Table 10 determines the corresponding times to complete the session and Table 11 shows the HR zones to be working in.
- Ensure that you are training at the intensity for the level that you are at according to the Table 3 - Fitness Checks. If you are at Level 2, complete the prescribed runs in the times noted for Level 2 while keeping your HR in the corresponding zone. For example, complete a 5 km tempo run in 22:30 – 25:38 (Level 2). Your HR should remain at 85-90% of your maximum HR (MHR). For more details see the HR ZONES section on page 41.

Aerobic Continuous

- Aerobic continuous training is known as long duration training and is characterized by moderate intensity. This type of training elicits basic cardiovascular adaptations to allow for progressions in intensity, duration, and volume.
- Aerobic continuous training is prescribed by duration and relative intensity.
- Complete the prescribed training session for the time indicated while maintaining your HR within the prescribed intensity zone.

Tempo Run

- A tempo run is generally completed at the intensity above the lactate threshold. It is completed at a steady pace and generally lasts anywhere from 15-35 min. It induces both aerobic and anaerobic physiological adaptations.

- Tempo runs are prescribed by duration or distance as well as relative intensity (% MHR).
- When prescribed for distance, complete the run according to Table 10 depending on what level you are at.
- Times in Table 10 are in the format of min:sec.

TABLE 10 – RUNNING DISTANCE, INTENSITY, AND TIME

DISTANCE	INTENSITY	LEVEL 1		LEVEL 2		LEVEL 3	
5 km	80%	29:26	27:15	27:14	25:18	25:17	23:37
	85%	27:42	25:39	25:38	23:49	23:48	22:14
	90%	26:10	24:13	24:12	22:30	22:29	21:00
3 km	90%	15:42	14:33	14:32	13:30	13:29	12:36
	95%	14:52	13:47	13:46	12:48	12:47	11:56

Aerobic Intervals

- Interval training involves short duration high intensity bouts of training followed by a corresponding rest period. It can focus on inducing physiological adaptations to either the aerobic or the anaerobic system.
- Intervals are prescribed by duration or distance as well as work to rest ratio.
- Interval training is prescribed using work to rest ratios. This means that you work hard for a prescribed amount of time followed by an active recovery (resting) according to the ratio. For example, an aerobic interval session of 5 km, 2:1 (60 sec) means that you run hard for 2 min followed by jogging for 1 min easy for a total distance of 5 km.

Anaerobic Intervals

- Generally for anaerobic intervals the duration is shorter, more intense, and has a longer rest period compared to aerobic intervals.
- Anaerobic intervals are only included in the Functional training block.

- They are designed to be completed on a spin bike but may be completed as running intervals instead.
- The interval times are indicated in **Table 2 - Training Prescription** on pages 20-22.
- Anaerobic intervals are short in duration and should be completed at or near maximal effort.
- The rest time for each interval are as follows:
 - o 60 sec interval = 90 sec rest, 1:1.5 work to rest ratio
 - o 30 sec interval = 60 sec rest, 1:2 work to rest ratio
 - o 15 sec interval = 45 sec rest, 1:3 work to rest ratio

SWIMMING

- Swimming is prescribed as either aerobic continuous or interval training.
- It is prescribed according to distance or work to rest ratios only.
- Treading water may follow a swimming session. It is prescribed in the format of sets x time.

HR ZONES

To determine your training HR (THR) you will first need to check your resting HR (RHR). To do this, simply take your HR for 30 sec when you wake up in the morning and multiple by 2. Next, determine your age predicted MHR by subtracting your age from 220. Finally, to determine your THR enter your information into the following formula:

$$\text{THR} = [(\text{MHR} - \text{RHR}) \times \text{intensity}] + \text{RHR}$$

Table 11 provides an example for a 25 year old with a RHR of 60 bpm.

AGE = 25

RHR = 60

MHR = $(220 - 25) = 195$

THR = $[(195 - 60) \times 65\%] + 60 = 148$

THR = $[(195 - 60) \times 74\%] + 60 = 160$

Complete Table 12 with your personal HR information to use as a reference while you train.

TABLE 11 - EXAMPLE OF THR ZONES

MHR	ZONE 1		ZONE 2		ZONE 3		ZONE 4		ZONE 5	
195	EASY		MODERATE		HARD		VERY HARD		MAXIMUM	
RHR	65%	74%	75%	81%	82%	90%	91%	97%	98%	100%
60	148	160								

TABLE 12 - PERSONAL THR ZONES

MHR	ZONE 1		ZONE 2		ZONE 3		ZONE 4		ZONE 5	
	EASY		MODERATE		HARD		VERY HARD		MAXIMUM	
RHR	65%	74%	75%	81%	82%	90%	91%	97%	98%	100%

MUSCULAR INTERVAL TRAINING

Muscular intervals are a combination of interval running followed by muscular endurance exercises. The purpose of muscular intervals is to saturate the muscular and cardiovascular systems with lactic acid. Lactic acid is a by-product of the anaerobic energy system and is produced during high intensity activities. This type of training induces the physiological adaptations intended to enhance the metabolic pathways that deal with the removal of lactic acid. Muscular intervals are trained in both physical and functional cycles.

General instructions

- Complete the training sessions on the required days and times as indicated in **Table 2 - Training Prescription** on pages 20-22.
- Complete 1 round only of the muscular interval training session.
- Reps for the muscular endurance exercises are indicated in Table 2.
- Complete 1 interval run (sprint) followed by the corresponding physical exercises, then move on to the next set.
- Rest for a minimum of 2 min following each muscular interval set.
- Ensure that you complete an extensive warm up prior to each muscular interval training session to reduce the risk of injury.

- The muscular interval training sessions along with the times to complete the runs can be found in Tables 13 and 14. The runs should be completed at one of the intensities listed in Table 14.
- Detailed descriptions of each exercise are located in Chapter 4 - Exercise Description for your convenience.

TABLE 13 – MUSCULAR INTERVAL SESSIONS

PHYSICAL	FUNCTIONAL
Exercise	Exercise
400 m Run	200 m Run
Squat Thrusts / Bird Dog 400 m Run	Burpee Jumps / SL Supine Bridge 200 m Run
Squat Thrusts / Bird Dog 400 m Run	Burpee Jumps / SL Supine Bridge 200 m Run
BW Squats / Push-Ups 200 m Run	SL Squats / T-Push-Ups 100 m Run
BW Squats / Push-Ups 200 m Run	SL Squats / T-Push-Ups 100 m Run
Lunges / Supine Bridge 200 m Run	SL Deadlifts / Dead Bug 100 m Run
Lunges / Supine Bridge	SL Deadlifts / Dead Bug

**TABLE 14 – MUSCULAR INTERVAL RUNNING
DISTANCE, INTENSITY, AND TIME**

DISTANCE	INTENSITY	LEVEL 1		LEVEL 2		LEVEL 3	
400 m	100%	1:53	1:46	1:45	1:38	1:37	1:32
	105%	1:48	1:41	1:40	1:34	1:33	1:27
	110%	1:43	1:36	1:35	1:29	1:28	1:23
200 m	105%	0:54	0:51	0:50	0:47	0:46	0:44
	110%	0:51	0:49	0:48	0:45	0:44	0:42
	115%	0:49	0:47	0:46	0:43	0:42	0:40
100 m	105%	0:27	0:26	0:25	0:24	0:23	0:22
	110%	0:26	0:25	0:24	0:23	0:22	0:21
	115%	0:25	0:24	0:23	0:22	0:21	0:20

TECHNIQUE LIFTING

Technique lifting is designed to reinforce correct lifting technique in order to build the technical foundation for further more complex training. Technique lifting also facilitates recovery by putting the muscular system through a full range of motion with very light weights. This acts to break up the metabolic waste in the muscles and facilitate its removal by the cardiovascular system.

General instructions

- Complete technique lifting sessions on the required days and times as indicated in **Table 2 - Training Prescription** on pages 20-22.
- Complete 3 sets of 15 reps for each exercise listed in Table 15.
- Ensure that all exercises are completed with proper technique for every rep.
- Move in a smooth, continuous, and controlled manner throughout a full range of motion.
- Begin with no weight on the barbell and progress to using light weights once you are comfortable with the movement.
- Do not attempt any of the lifts with moderate to heavy weights.
- Detailed descriptions of each exercise are located in Chapter 4 - Exercise Description for your convenience.

TABLE 15 – TECHNIQUE LIFTING EXERCISES

TECHNIQUE LIFTING EXERCISES	
Squats	Deadlifts
Front Squats	Drop Squats
High Pulls	

PLYOMETRIC TRAINING

Plyometric training results in an increase in the overall neural stimulation of the muscle and enhances the ability to generate force. The arousal of the nervous system will assist in rate of force

development which will, in turn, enhance power output. Plyometric training is similar in the physical and functional training blocks.

General instructions

- Complete the plyometric (plyo) training circuit on the required days and times as indicated in **Table 2 - Training Prescription** on pages 20-22.
- The plyo exercises are listed in Table 16. Complete 1 set of the required reps only.
- Ensure that you complete an extensive warm up prior to each plyo training session to reduce the risk of injury.
- Focus on completing quality reps by reacting quickly and limiting the amount of time that your feet are in contact with the floor. Try to be explosive and complete the reps as quickly as possible.
- Detailed descriptions of each exercise are located in Chapter 4 - Exercise Description for your convenience.

TABLE 16 – PLYOMETRIC TRAINING CIRCUIT

PLYOMETRIC TRAINING EXERCISES	
Exercise	Reps
Front / Back Hops	20
Side to Side Hops	20
Tuck Jumps	12
Alternating Jumps on Step	10

RUCK MARCHING

Ruck marching is designed to develop the capacity to carry loads over a long distance. This type of training adds an external load to the body which stresses the body's foundation and thus is found in functional training only. The external load stress both the muscular and aerobic systems and enhance the body's ability to carry loads. Additionally, this type of training increases the resiliency of the body when dealing with load carriage.

General instructions

- Complete the ruck march training sessions on the required days and times as indicated in **Table 2 - Training Prescription** on pages 20-22.
- The distances to be completed and loads to be carried can be found in Table 2.
- The speed for the ruck march should not exceed 5 km per hour.
- In order to avoid potential injuries, do not attempt to complete any of the prescribed marches faster than 5 km per hour.
- The time in which to complete each ruck march is listed in Table 17.

TABLE 17 – RUCK MARCH LOAD, DISTANCE, AND TIME

RUCK MARCH		
Load	Distance	Time
15 kg	3 km	36 min
15 kg	3.5 km	41 min
15 kg	4 km	48 min
20 kg	5 km	60 min
20 kg	5.5 km	66 min
20 kg	6 km	72 min
25 kg	6 km	72 min

MOBILITY

The purpose of the mobility training is to release stiff tissues, restore full range of motion and enable good body position and movement. This helps to restore full physical capacities and make them available at a moment's notice. There are 2 types of mobility training: daily training and whole body mobility training. Daily training focuses on selecting 3 areas of the body to work on each day whereas whole body mobility training is to be completed on the active recovery days. There are 3 separate mobilization techniques:

- Pressure wave: lie on a ball or on a foam roller completely relaxed, slowly roll the targeted area over the ball or the foam roller using the full weight of the body.
- Contract and relax: identify a tight or sore area of the body underneath the ball or the foam roller. Then, repeatedly engage and relax the targeted musculature allowing the ball or the foam roller to sink deeper into the tissue.
- Smash and move: identify a tight or sore area of the body. Pin tissue of the area down on a ball or on a foam roller with pressure (smash) then move the targeted limb through as much range of motion as possible (move).

General instructions

- Complete the daily mobility training following your evening workout or prior to going to bed.
- For daily mobility training, select 3 areas to work on each day and perform the corresponding exercise. It should take no longer 15-20 min per day.
- Ensure that you resolve issues with sore joints and tissues first and that you spend at least 2 min working on each exercise (4 min if the exercise is to be completed on each side of the body) up to 5 min per exercise.
- Mobility training changes day to day depending on the areas of restriction, movements performed, and positions adopted throughout the day.
- Complete the entire mobility circuit on the active recovery and mobility days prescribed in **Table 2 - Training Prescription**.
- The list of mobility exercises can be found in Table 18.
- Detailed descriptions of each exercise are located in Chapter 4 - Exercise Description for your convenience.

TABLE 18 – MOBILITY TRAINING EXERCISES

MOBILITY TRAINING EXERCISES	
Area	Exercise
Foot	Plantar Surface Smash
Lower leg	Calf Smash
	Lateral Anterior Compartment Smash
Upper leg	Adductor Smash
	Quad Smash and Move
	Couch Mobilization
	Hamstring Smash and Move
Hip	IT Band Smash
	Hip External Rotation with Flexion
Sides	Glute Smash and Move
	Oblique Side Smash
Back	Overhead Tissue Smash
	Low Back Smash
	Shoulder Rotator Smash and Move
	T-Spine Extension with Side to Side
Chest	Trap Scrub
Arm	Anterior Compartment Smash
	Triceps Extension Smash and Move

WARM UP / MOVEMENT PREPARATION

General instructions

- Warm up the cardiovascular and muscular systems by lightly jogging, skipping or spinning for 8-12 min.
- Complete the movement preparation prior to every training session. Ensure that you are especially diligent in completing the movement preparation prior to the more intense workouts.
- Complete 1 set of 10 reps for each movement preparation exercise listed in Table 19.

- Ensure that you complete unilateral (one side of the body) exercises on both sides of the body.
- Complete the exercises in a smooth and controlled manner. Ensure that you are gently going to full range of motion with correct technique for each rep.
- Detailed descriptions of each exercise are located in Chapter 4 - Exercise Description for your convenience.

Note: If you have an area of your body that is still tight after completing the movement preparation, take a few additional min to loosen up that area.

TABLE 19 – MOVEMENT PREPARATION EXERCISES

MOVEMENT PREPARATION EXERCISES		
Category	Exercise 1	Exercise 2
Squat	Squat to Stand	Frog Squat
Hinge	Supine Bridge	SL Adductor Dips
Lunge	Spiderman with Overhead Reach	Split Stance Adductor Mobilization
Press	Pullovers	Scapular Wall Slides
Pull	Roller Angels	Roller Alternating Flexion / Extension
Push	Elbow Push-Ups	SA Windmill
Core	Inch Worm	Quadruped Extension / Rotation

COOL DOWN / REGENERATION

General instructions

- Cool down the cardiovascular and muscular systems by lightly jogging, skipping or spinning for 8-12 min.
- Complete the regeneration exercises following every training session. Ensure that you are especially diligent in completing the regeneration after the more intense workouts.
- Complete 1 set of 10 reps for each of the active isolated stretching (AIS) exercises listed in Table 20.

- AIS is a form of myofascial release which promotes functional and physiological restoration of muscles.
- Hold each stretch for a count of 2 prior to completing the movement.
- Ensure that you complete unilateral exercises on both sides of the body.
- Detailed descriptions of each exercise are located in Chapter 4 - Exercise Description for your convenience.

TABLE 20 – REGENERATION EXERCISES

REGENERATION EXERCISES	
Category	Exercise
Squat, Hinge, Lunge	Lying Calf Stretch
	Lying Hamstring Stretch
	Lying IT Band / Glute Stretch
	Lying Adductors Stretch
	Lying Quadriceps Stretch
	Hip External Rotation with Flexion
	Olympic Wall Squat with External Rotation
Press, Push, Pull	Reach Roll and Lift
	Quadruped Extension / Rotation
	SA Windmill
	Shoulder Flexion
	Triceps Stretch

CBRN OPERATOR



EXERCISE DESCRIPTION

4

CBRN OPERATOR
PRE-SELECTION PHYSICAL FITNESS TRAINING PROGRAM



STRENGTH - PHYSICAL SESSION I



Goblet Squats

- Stand with feet shoulder width apart, toes pointing forwards, back erect, and head in a neutral position.
- Grasp a kettlebell in both hands by the horns and hold in front of the sternum.
- Screw the feet into the floor, engage the glutes and abdominals to brace the core and set the shoulders in a stable position.
- Squat down until the thighs are parallel to the floor while maintaining a neutral head position and knees aligned over the feet.
- Return to the starting position by pressing the feet into the floor, extending the hips and knees while maintaining the integrity of the upper body.



Pull Through

- Stand erect with feet shoulder width apart and holding a rope handle or strength band in both hands.
- Screw the feet into the floor, engage the glutes and abdominals to brace the core.
- Bend at the knees and hips and lower the torso to a 45° angle.
- Engage the glutes and push the hips forwards to return to the starting position.



Lunges



- Stand with feet shoulder with apart, arms hanging at the sides, head neutral, with chest up and out.
- Engage the glutes and abdominals to brace the core.
- Take a step with one leg in front of the body such that there is a 90° angle at both knees.
- Return to the starting position by pressing the foot into the floor and repeat with the opposite leg.
- One rep consists of completing the exercise with both legs.

½ Kneeling Press



- Kneel in a split stance with one knee on the floor and the other bent at 90° with the foot flat on the floor.
- Ensure that there is a 90° angle at both hip and knee joints.
- Hold a pair of DB with an overhand grip with palms facing forwards, just outside and above the shoulders.
- Engage the glutes and abdominals to brace the core and set the shoulders in a stable position.
- Press the DB upwards until the arms are fully extended, maintaining the integrity of the torso (abdominals engaged, upper body remains static).
- Lower the DB in a controlled manner to the starting position.

Pull-Ups



- Grasp the bar with an overhand grip slightly wider than shoulder width apart.
- Hang with arms fully extended and knees flexed and ankles crossed.
- Pull the ribcage down to brace the core.
- Pull up until the chin is above the bar while maintaining a neutral head position.
- Lower down to the starting position in a slow controlled manner maintaining the integrity of the body.
- Pause momentarily at the bottom to ensure that you do not swing or kip.

DB Push-Up to Row



- Take a position with hands on DB on the floor shoulder width apart, back straight and head neutral.
- Engage the glutes and abdominals to brace the core and maintain a stable position.
- Lower the body to the floor keeping the forearms vertical.
- Push back up to the starting position forcefully while maintaining the integrity of the upper body.
- Continue by lifting (row) one DB up towards one shoulder.
- Lower the DB back down and repeat on the opposite side.



Inverted Rows

- Grasp the barbell with an overhand grip, hands shoulder width apart, arms fully extended, heels on the floor and body completely straight.
- Engage the glutes and abdominals to brace the core.
- Squeeze the shoulder blades together, and pull with the arms until the torso touches the bar.
- Slowly lower back to the starting position.



Plate Pinch Deadlifts

- Stand erect with feet flat on the floor between hip and shoulder width apart, toes pointed forwards.
- Hold 2 (or more) plates in one hand with the smooth edges facing outwards.
- Engage the glutes and abdominals to brace the core.
- Squat down, lower the shoulders and reach for the floor.
- Return to the starting position by extending knees and hips and lifting chest upwards until standing fully erect.
- Maintain the integrity of the torso to prevent rotation due to the uni-lateral load.



Top Grip DB Farmer's Walk



- Grasp one DB in each hand by the top of the DB.
- Engage the glutes and abdominals to brace the core and maintain a neutral posture throughout.
- Walk 20 m carrying the DB at the sides and chest up and out.
- At the 20 m mark, turn around and walk back.



STRENGTH - PHYSICAL SESSION II

Box Squats



- Stand with feet shoulder width apart, toes pointing forwards, back erect, head in a neutral position and squatting distance away from a box that is slightly above knee height.
- Squeeze the shoulder blades together creating a shelf for the barbell and rest the barbell on the shelf.
- Screw the feet into the floor, engage the glutes and abdominals to brace the core.
- Squat down until the butt touches the box while maintaining a neutral head position and knees aligned over the feet.
- Return to the starting position by pressing the feet into the floor, extending the hips and knees while maintaining the integrity of the upper body.



Romanian Deadlifts

- Stand erect with feet flat on the floor between hip and shoulder width apart, toes pointed forwards.
- Screw the feet into the floor, engage the glutes and abdominals to brace the core.
- Grasp the barbell with an overhand grip slightly wider than shoulder width apart, with arms extended.
- Slightly bend the knees and hinge at the hip until the torso is at a 45° angle.
- Push the hips forwards and stand up keeping the barbell as close to the shins/body as possible during the lift.



Bulgarian Split Squats

- Stand with feet shoulder with apart, toes pointing forwards, back erect, and head in a neutral position.
- Squeeze the shoulder blades together creating a shelf for the barbell.
- Assume a staggered stance by placing the instep of the back foot on a box or bench keeping the majority of the weight on the front leg.
- Screw the front foot into the floor, engage the glutes and abdominals to brace the core and imagine breaking the barbell with the hands to set a stable upper body position.



- Squat down until the thigh is parallel to the floor while maintaining a neutral head position, and knee aligned over the foot.
- Return to the starting position by pressing the foot into the floor, extending the hip and knee while maintaining the integrity of the upper body.

Kneeling Press



- Kneel erect with knees shoulder width apart, hold a pair of DB with an overhand grip and palms facing forwards, just outside and above the shoulders.
- Engage the glutes and abdominals to brace the core and set the shoulders in a stable position.
- Press the DB upwards until the arms are fully extended, maintaining the integrity of the torso (abdominals engaged, upper body remains static).
- Lower the DB in a controlled manner to the starting position.

Chin-Ups



- Grasp the bar with an underhand grip slightly less than shoulder width apart.
- Hang with arms fully extended, knees flexed and ankles crossed.
- Pull the ribcage down to brace the core.
- Pull up until the chin is above the bar while maintaining a neutral head position.
- Lower down to the starting position in a slow controlled manner maintaining the integrity of the body.
- Pause momentarily at the bottom to ensure that you do not swing or kip.

Bench Press



- Lie on a bench with feet flat on the floor, hips, shoulders and head in contact with the bench.
- Grasp the barbell with an overhand grip slightly wider than shoulder width apart.
- Engage the glutes and abdominals to brace the core.
- Lift the load above the chest with arms fully extended.
- Lower the barbell to approximately 2 cm above the chest.
- Push the barbell back up to the starting position.



DB Row on Bench



- Take a position with one hand on a DB and the other hand on a bench, shoulder width apart, back straight and head neutral.
- Brace the core by engaging the glutes and abdominals.
- Row the DB up towards one shoulder.
- Lower the DB back down.



Plate Pinch Deadlifts



- Stand erect with feet flat on the floor between hip and shoulder width apart, toes pointed forwards.
- Hold 2 (or more) plates in one hand with the smooth edges facing outwards.
- Engage the glutes and abdominals to brace the core.
- Squat down, lower the shoulders and reach for the floor.
- Return to the starting position by extending knees and hips and lifting chest upwards until standing fully erect.
- Maintain the integrity of the torso to prevent rotation due to the uni-lateral load.

Top Grip DB Farmer's Walk



- Grasp one DB in each hand by the top of the DB.
- Engage the glutes and abdominals to brace the core and maintain a neutral posture throughout.
- Walk 20 m carrying the DB at the sides and chest up and out.
- At the 20 m mark, turn around and walk back.

STRENGTH - FUNCTIONAL SESSION I

Thrusters



- Stand with feet shoulder width apart, hold the barbell across the front of the shoulders with an overhand grip, and lift the upper arms until they are parallel with the floor, resting the barbell on the shoulders and hands.
- Screw the feet into the floor, engage the glutes and abdominals to brace the core.
- Squat down until the thighs are parallel to the floor while maintaining a neutral head position and knees aligned over the feet.
- Return to the starting position by pressing the feet into the floor, extending the hips and knees while maintaining the integrity of the upper body.
- Press the barbell up and over the head until the arms are extended, body is completely straight and the barbell is slightly behind the head.



Front Squats



- Stand with feet shoulder width apart, hold the barbell across the front of the shoulders with an overhand grip, and lift the upper arms until they are parallel with the floor, resting the barbell on the shoulders and hands.
- Screw the feet into the floor, engage the glutes and abdominals to brace the core.



- Squat down until the thighs are parallel with the floor while maintaining a neutral head position, and knees aligned over the feet.
- Return to the starting position by pressing the feet into the floor, extending the hips and knees while maintaining the integrity of the upper body.

Deadlifts



- Stand with feet shoulder width apart, toes pointing forwards, back erect, and head in a neutral position.
- Squat down, lower the shoulders and grasp the barbell in an overhand grip with hands slightly wider than shoulder width and outside the knees, back flat, shoulders slightly in front of the barbell.
- Engage the glutes and abdominals to brace the core.
- Forcefully lift the barbell off the floor by extending knees and hips and lifting chest upwards until standing fully erect.
- Keep the barbell as close to the shins / body as possible during the lift.
- Lower the barbell by flexing knees and hips while maintaining the integrity of the torso (flat back, do not bent forwards).



Bent over Row

- Grasp the barbell with an overhand grip slightly wider than shoulder width apart, with arms extended.
- Slightly bend the knees and hinge at the hip until the torso is at a 45° angle.
- Engage the glutes and abdominals to brace the core.
- Pull the barbell up to the torso, maintaining a braced core, flat back, and knees slightly bent.
- Lower the barbell back to the starting position.



SA DB Bench Press

- Lie on a bench with the feet flat on the floor, hips, shoulders and head in contact with the bench.
- Grasp a DB in each hand and extend the arms up toward the ceiling.
- Engage the glutes and abdominals to brace the core.
- Lower one arm to approximately 2 cm above the chest keeping the other arm extended.
- Push the DB back up to the starting position.
- Repeat on the opposite side.

Towel Inverted Row



- Wrap a towel around a barbell such that there are 2 “handles” hanging down at shoulder width apart.
- Grasp the towel with an overhand grip, arms fully extended, heels on the floor and body completely straight.
- Externally rotate the hands to create a stable upper body and engage the glutes and abdominals to brace the core.
- Squeeze the shoulder blades together, and pull with the arms until the torso is level with the hands.
- Slowly lower back to the starting position.

SA Barbell Deadlifts



- Stand erect with feet flat on the floor between hip and shoulder width apart, toes pointed forwards.
- Squat down, lower the shoulders and grasp the barbell by the weight sleeve.
- Engage the glutes and abdominals to brace the core.
- Return to the starting position by extending knees and hips and lifting chest upwards until standing fully erect.
- Maintain the integrity of the torso to prevent rotation due to the uni-lateral load.

STRENGTH - FUNCTIONAL SESSION II



Sumo Deadlift to High Pull

- Stand with feet flat one and a half to two times shoulder width apart, toes pointed outwards.
- Squat down with the hips, lower the shoulders and grasp the barbell with an overhand grip with hands approximately 30 cm apart, back flat, shoulders slightly in front of the barbell and a neutral head position.
- Screw the feet into the floor, engage the glutes and abdominals to brace the core.
- Lift the barbell off the floor by extending knees and hips and lifting chest upwards until standing erect.
- Continue by pulling the barbell up along the abdomen towards the chin, keeping the elbows pointed out to the sides.



Squats

- Stand with feet shoulder with apart, toes pointing forwards, back erect, and head in a neutral position.
- Squeeze the shoulder blades together creating a shelf for the barbell.
- Screw the feet into the floor, engage the glutes and abdominals to brace the core and imagine breaking the barbell with the hands to set a stable upper body position.



- Squat down until the thighs are parallel to the floor while maintaining a neutral head position, knees aligned over the feet.
- Return to the starting position by pressing the feet into the floor, extending the hips and knees while maintaining the integrity of the upper body.

Sumo Deadlifts



- Stand with feet flat one and a half to two times shoulder width apart, toes pointed outwards.
- Squat down with the hips, lower the shoulders and grasp the barbell with an overhand grip with hands approximately 30 cm apart, back flat, shoulders slightly in front of the barbell and a neutral head position.



- Screw the feet into the floor, engage the glutes and abdominals to brace the core.
- Lift the barbell off the floor by extending knees and hips and lifting chest upwards until standing erect.
- Return to the starting position in a controlled manner.

Barbell T-Bar Rows



- Slightly bend the knees and hinge at the hip until the torso is at a 45° angle.
- Engage the glutes and abdominals to brace the core.



- Grasp the V-handle with both hands, squeeze the shoulder blades together and pull the barbell up to the torso, maintaining a braced core, flat back and knees slightly bent.
- Lower the barbell back to the starting position.

DB T-Push-Ups



- Take a position with arms extended and hands on DB on the floor shoulder width apart, back straight and head neutral.
- Engage the glutes and abdominals to brace the core to maintain a stable position and engage the pecs to stabilize the shoulders.
- Lower the body to the floor keeping the forearms vertical.
- Push back up to starting position forcefully, while maintaining the integrity of the upper body.
- Continue by rotating one side of the body upward and reach the arm to the ceiling.
- Lower the DB back down and repeat on the opposite side.

Towel Inverted Row



- Wrap a towel around a barbell such that there are 2 “handles” hanging down at shoulder width apart.
- Grasp the towel with an overhand grip, arms fully extended, heels on the floor and body completely straight.
- Externally rotate the hands to create a stable upper body and engage the glutes and abdominals to brace the core.
- Squeeze the shoulder blades together, and pull with the arms until the torso is level with the hands.
- Slowly lower back to the starting position.

SA Barbell Deadlifts



- Stand erect with feet flat on the floor between hip and shoulder width apart, toes pointed forwards.
- Squat down, lower the shoulders and grasp the barbell by the weight sleeve.
- Engage the glutes and abdominals to brace the core.
- Return to the starting position by extending knees and hips and lifting chest upwards until standing fully erect.
- Maintain the integrity of the torso to prevent rotation due to the uni-lateral load.

STRENGTH - FUNCTIONAL CIRCUIT I

Squat and Press



- Stand with feet shoulder width apart, toes pointing forwards, back erect, and head in a neutral position.
- Grasp the rucksack or backpack by the sides in both hands and hold in front of the chest.
- Engage the glutes and abdominals to brace the core.
- Squat down until the thighs are parallel to the floor while maintaining a neutral head position and knees aligned over the feet.
- Return to the starting position by pressing the feet into the floor, extending the hips and knees while maintaining the integrity of the upper body.
- Press the rucksack or backpack overhead until the arms are fully extended maintaining the integrity of the body.

DB Row on Bench



- Take a position with one hand on a DB and the other hand on a bench, shoulder width apart, back straight and head neutral.
- Brace the core by engaging the glutes and abdominals.
- Row the DB up towards one shoulder.
- Lower the DB back down.

SL Deadlift



- Stand erect with feet underneath the hips and hold a kettlebell or DB in each hand at the sides of the body.
- Screw one foot into the floor and engage the glutes and abdominals to brace the core.
- Hinge at the hips reaching back with the opposite leg and keeping a straight line with the torso.
- In a slow and controlled manner, return to the starting position.

Push-Ups Wearing Ruck



- Put on a weighted rucksack or backpack.
- Take a position with hands flat on the floor, underneath the shoulders, fingers pointing forwards, back straight and head neutral.
- Engage the abdominals to maintain a straight back, and a neutral head posture throughout the exercise.
- Lower the torso down towards the floor until arms reach a 90° angle keeping the forearms vertical, then push up back to the starting position.

Rucksack Squats



- Stand with feet shoulder with apart, toes pointing forwards, back erect, and head in a neutral position.
- Grasp the rucksack or backpack in a bear hug type manner.
- Screw the feet into the floor, engage the glutes and abdominals to brace the core.
- Squat down until the thighs are parallel with the floor while maintaining a neutral head position, and knees aligned over the feet.
- Return to the starting position by pressing the feet into the floor, extending the hips and knees while maintaining the integrity of the upper body.



Military Press



- Stand with feet shoulder with apart, toes pointing forwards, back erect, head in a neutral position, and hold the barbell in front of the shoulders with an overhand grip.
- Engage the glutes and abdominals to brace the core.
- Press the barbell overhead until the arms are fully extended maintaining the integrity of the body.
- Lower the load back to the starting position in a controlled manner.



Rucksack Suitcase Carry



- Grasp the rucksack in one hand with an overhand grip, arms hanging by the sides, standing erect, head neutral, and feet hip width apart.
- Engage the glutes and abdominals to brace the core.
- Walk the designated distance carrying the rucksack at the side while maintaining the integrity of the upper body.
- At the end point, turn around and walk back.



Reverse Lunges



- Stand with feet shoulder with apart, arms hanging at the sides, head neutral, with chest up and out.
- Screw one foot into the floor, engage the glutes and abdominals to brace the core.
- Take a step backwards with the opposite leg behind the body such that there is a 90° angle at both knees.
- Return to the starting position and repeat with the opposite leg.



STRENGTH - FUNCTIONAL CIRCUIT II

Floor to Wall Touches



- Stand in front of a wall with feet shoulder width apart, toes pointing forwards, back erect, and head in a neutral position.
- Place a load (i.e., a kettlebell, DB or weight plate) on the floor in front of the feet.
- Squat down while maintaining a neutral head position, and knees aligned over the feet and grasp the load.
- Engage the glutes and abdominals to brace the core.
- Return to the starting position by pressing the feet into the floor, extending the hips and knees while maintaining the integrity of the upper body.
- Continue by curling the load until it is at shoulder height and press the load in front to touch the wall.
- Lower the load back to the floor in a controlled manner.



SA Kettlebell Press

- Stand with feet shoulder width apart, toes pointing forwards, back erect, and head in a neutral position holding a kettlebell in one hand by the handle.
- Engage the glutes and abdominals to brace the core.
- Press the kettlebell overhead until the arm is fully extended while maintaining the integrity of the body.
- Lower the kettlebell back to the starting position in a controlled manner.





Suitcase Squat and Carry

- Place a kettlebell or DB on the floor beside each foot.
- Stand with feet shoulder width apart, toes pointing forwards, back erect, and head in a neutral position.
- Squat down to grasp the load while maintaining a neutral head position, and knees aligned over the feet.
- Engage the glutes and abdominals to brace the core.
- Return to the starting position by pressing the feet into the floor, extending the hips and knees while maintaining the integrity of the upper body.
- Carry the load the designated distance.



Inverted Rows

- Grasp the barbell with an overhand grip, hands shoulder width apart, arms fully extended, heels on the floor and body completely straight.
- Engage the glutes and abdominals to brace the core.
- Squeeze the shoulder blades together, and pull with the arms until the torso touches the bar.
- Slowly lower back to the starting position.

Kettlebell Step-Ups



- Stand with feet shoulder width apart and hold a kettlebell in each hand at the sides of the body.
- Place the entire foot of the lead (stepping) leg on the box.
- Press the heel of the lead leg into the box and forcefully extend the lead hip and knee to push up the body onto the box.
- Once standing fully erect on the box, lower the body until the trail leg touches the floor and repeat with the opposite leg.



T-Push-Ups



- Take a position with hands on the floor shoulder width apart, back straight and head neutral.
- Engage the glutes and abdominals to brace the core to maintain a stable position and engage the pecs to stabilize the shoulders.
- Lower the body to the floor keeping the forearms vertical.
- Push back up to starting position forcefully, while maintaining the integrity of the upper body.
- Continue by rotating one side of the body upward and reach the hand towards the ceiling.
- Lower the arm down and repeat on the opposite side.



Kettlebell Swings



- Stand with feet shoulder width apart, toes pointing forwards, back erect, and head in a neutral position holding a kettlebell with two hands with an overhand grip.
- Engage the glutes and abdominals to brace the core.
- Squat down until your knees and torso are at a 45° angle, and swing the kettlebell backwards between the legs.
- Keep the arms straight and thrust the hips forward to stand up, swinging the kettlebell to chest height under control while maintaining the integrity of the upper body.



SA Kettlebell Deadlifts



- Stand erect with feet flat on the floor between hip and shoulder width apart, toes pointed forwards.
- Squat down, lower the shoulders and grasp the kettlebell by the handle.
- Engage the glutes and abdominals to brace the core.
- Return to the starting position by extending knees and hips and lifting chest upwards until standing fully erect.
- Maintain the integrity of the torso to prevent rotation due to the uni-lateral load.



STRENGTH - OPERATIONAL

Sandbag Step-Ups



- Stand in front of the step with feet shoulder width apart and hold a SB in each hand at the sides of the body.
- Place the entire foot of the lead (stepping) leg on the box.
- Press the heel of the lead leg into the box and forcefully extend the lead hip and knee to push up the body onto the box.
- Once standing fully erect on the box, lower the body until the trail leg touches the floor and repeat with the opposite leg.

FORCE Drag



- Squat down to pick up the SB.
- Engage the glutes and abdominals to brace the core.
- Hold the SB in a cradle style and walk backwards dragging the kit.
- Keep the feet straight and maintain a braced core throughout the exercise.

Sandbag Squat and Carry



- Place a SB on the floor beside each foot.
- Stand with feet shoulder with apart, toes pointing forwards, back erect, and head in a neutral position.
- Squat down to grasp the SB while maintaining a neutral head position, and knees aligned over the feet.
- Engage the glutes and abdominals to brace the core.
- Return to the starting position by pressing the feet into the floor, extending the hips and knees while maintaining the integrity of the upper body.
- Carry the SB the designated distance.

Sandbag Push on Floor



- Crouch down behind a SB placed on the floor.
- Place the hands on top of the SB with arms extended.
- Engage the abdominals and glutes to brace the core and maintain a neutral spine position.
- Push the SB across the floor the designated distance.



Sandbag SL Deadlift

- Stand erect with feet underneath the hips and hold a SB in each hand at the sides of the body.
- Screw one foot into the floor and engage the glutes and abdominals to brace the core.
- Hinge at the hips reaching back with the opposite leg and keeping a straight line with the torso.
- In a slow and controlled manner, return to the starting position.



Sandbag Lift to Box

- Place a SB on the floor in front of the feet.
- Stand in front of a box with feet shoulder width apart, toes pointing forwards, back erect, and head in a neutral position.
- Squat down while maintaining a neutral head position and knees aligned over the feet and grasp the SB.
- Engage the glutes and abdominals to brace the core.
- Return to the starting position by pressing the feet into the floor, extending the hips and knees while maintaining the integrity of the upper body.
- Place the SB on top of a box set at hip height.
- Pause momentarily and then lower the SB back down to the floor.



CORE STRENGTH - PHYSICAL



Plank

- Take a position with forearms on the floor, elbows directly underneath the shoulders.
- Form a straight line with the body, shoulders back, chest slightly out and head neutral.
- Brace the core by engaging the abdominals and squeezing the glutes.



Dead Bug



- Lie supine on the floor with hands up reaching towards the ceiling.
- Raise the knees such that there is a 90° angle of the knees and hips.
- Lower the left leg and arm towards the floor while raising the right arm above the head.
- Return to the starting position and repeat on the opposite side.



Supine Bridge



- Lie supine on the floor with feet flat on the floor, heels pulled up to the butt, arms resting on the floor by the sides, and head back in a neutral position.
- Engage the glutes and raise the hips off of the floor.
- Engage the abdominals to maintain a straight back.
- Hold for a count of 1 and then return to the starting position.



Bird Dog

- Take a position on the floor on all fours with palms flat on the floor shoulder width apart.
- Engage the abdominals to maintain the correct posture.
- Extend the right arm and left leg creating a straight diagonal line from wrist to ankle.
- Crunch the right elbow and the left knee so that they touch.
- Return to starting position and repeat with opposite arm and leg.



Side Plank

- Lie on the floor on one side with legs straight, and feet stacked on top of each other.
- Prop the torso up on one forearm with the elbow directly under the shoulder.
- Ensure that the shoulders are directly over each other.
- Engage the abdominals to keep the body rigid.
- Raise the hips off the floor creating a straight line from ankles to shoulders.
- One set consists of completing the exercise for both sides of the body.

Suitcase Carry



- Grasp one kettlebell (or DB) in one hand with an overhand grip, arms hanging by the sides, standing erect, head neutral, and feet hip width apart.
- Engage the glutes and abdominals to brace the core.
- Walk 20 m carrying the kettlebell (or DB) at the side while maintaining the integrity of the upper body.
- At the 20 m mark, turn around and walk back.

T-Stabilization



- Take a position with hands flat on the floor, shoulder width apart, fingers pointing forwards, back straight and head neutral.
- Engage the abdominals to keep the body rigid and shift the weight to one arm.
- Rotate the torso up until one shoulder is over the other and the other arm is reaching for the ceiling.

Kneeling Pallof Press



- Kneel erect on the floor and engage the glutes and abdominals.
- Grasp a cable pulley handle or band with both hands in front of the sternum.
- Press the arms out straight in front of the chest without allowing the upper body to rotate.
- Return to the starting position.



CORE STRENGTH - FUNCTIONAL

3-Point Plank



- Take a position with palms flat on the floor and directly underneath the shoulders.
- Form a straight line with the body, shoulders back, chest slightly out and head neutral.
- Brace the core by engaging the abdominals and squeezing the glutes.
- Lift one point of contact off the floor (i.e., right leg) and maintain the correct posture.

Stir the Pot



- Assume a plank position with elbows on a Swiss ball.
- Slowly make circles with the elbows while engaging the abdominals to maintain the plank position.
- Complete 5 circles clockwise followed by 5 counter clockwise circles.

Note: if the exercise presents too much of a challenge at first, complete the exercise with knees on the floor.

SL Supine Bridge



- Lie supine on the floor with one foot flat on the floor, heel pulled up to the butt, and the other leg extended, arms resting on the floor by the sides, and head back in a neutral position.
- Lift the extended leg off the floor, while engaging the glutes and the abdominals to maintain a flat back.
- Hold for a count of 1 and then return to the starting position.

Roll Out



- Assume a plank position with elbows on a Swiss ball.
- Slowly roll the ball forwards by straightening arms and extending shoulders.
- Engage the abdominals to pull the ball back to the starting position.

Note: if the exercise presents too much of a challenge at first, complete the exercise with knees on the floor.

Side Plank with Knee Tuck



- Lie on the floor on one side with legs straight and feet stacked on top of each other.
- Prop the torso up on one forearm with the elbow directly under the shoulder.
- Ensure that shoulders are directly over each other.
- Engage the abdominals to keep the body rigid.
- Raise the hips off the floor creating a straight line from ankles to shoulders.
- Tuck the knee of the top leg up to the chest and return to the starting position.

Bottom Up Walk



- Grasp a kettlebell in one hand so that the bottom of the kettlebell is facing the ceiling, other arm hanging by the side, standing erect, head neutral and feet hip width apart.
- Engage the glutes and abdominals to brace the core and maintain an erect posture throughout the exercise.
- Walk 20 m carrying the kettlebell with the bottom up and while maintaining the integrity of the upper body.
- At the 20 m mark, turn around and walk back.





DB T-Stabilization

- Take a position with arms extended and hands on DB on the floor shoulder width apart, back straight and head neutral.
- Engage the abdominals in order to keep the body rigid and shift the weight to one arm.
- Rotate the torso up until one shoulder is over the other and the arm is reaching for the ceiling.



1/2 Kneeling Chop

- Kneel on the floor in a split stance with one knee on the floor and the other bent at 90° with the foot flat on the floor.
- Ensure that there is a 90° angle at both hip and knee joints and that the load is positioned to the side of the knee that is on the floor.
- Engage the glutes and abdominals to maintain a stable position.
- Grasp the load with both hands, keep the arms fixed and pull the load down to the knee on an angle using the abdominal muscles.



MUSCULAR INTERVALS - PHYSICAL

Squat Thrusts



- Take a position with hands flat on the floor, underneath the shoulders, fingers pointed forwards, back straight and head neutral.
- In one smooth motion bring the knees as close to the chest as possible while maintaining the hands on the floor.
- Return to the starting position ensuring the correct posture.

Bird Dog



- Take a position on the floor on all fours with palms flat on the floor shoulder width apart.
- Engage the abdominals to maintain the correct posture.
- Extend the right arm and left leg creating a straight diagonal line from wrist to ankle.
- Crunch the right elbow and the left knee so that they touch.
- Return to starting position and repeat with opposite arm and leg.

Body Weight Squats



- Stand with feet shoulder width apart, toes pointing forwards, back erect, and head in a neutral position.
- Engage the glutes and abdominals to brace the core.
- Squat down until the thighs are parallel to the floor while maintaining a neutral head position, knees aligned over the feet, and extend the arms in front.
- Return to the starting position by pressing the feet into the floor, extending the hips and knees while maintaining the integrity of the upper body.

Push-Ups



- Take a position with hands flat on the floor shoulder width apart, back straight and head neutral.
- Engage the glutes and abdominals to brace the core and maintain a stable position.
- Engage the pecs to stabilize the shoulders and lower the body to the floor until arms reach a 90° angle.
- Push back up to the starting position forcefully, while maintaining the integrity of the upper body.

Lunges



- Stand with feet shoulder with apart, arms hanging at the sides, head neutral and back erect.
- Engage the glutes and abdominals to brace the core.
- Take a step with one leg in front of the body such that there is a 90° angle at both knees.
- Return to the starting position by pressing the foot into the floor and repeat with the opposite leg.
- One rep consists of completing the exercise with both legs.

Supine Bridge



- Lie supine on the floor with feet flat on the floor, heels pulled up to the butt, arms resting on the floor by the sides, and head back in a neutral position.
- Engage the glutes and raise the hips off of the floor.
- Engage the abdominals to maintain a straight back.
- Hold for a count of 1 and then return to the starting position.

MUSCULAR INTERVALS - FUNCTIONAL

Burpee Jumps



- Stand with feet shoulder width apart, arms hanging at the sides, head neutral and back erect.
- Take a position with hands flat on the floor, underneath the shoulders, fingers pointed forwards, knees underneath the chest.
- In one smooth motion kick the legs out so that the back is straight and the head is neutral (push-up position).
- Pull the knees back underneath the chest while maintaining the hands on the floor.
- From this position raise the head and chest, extend the hips, knees and ankles propelling the body up into the air.

SL Supine Bridge



- Lie supine on the floor with one foot flat on the floor, heel pulled up to the butt, and the other leg extended, arms resting on the floor by the sides, and head back in a neutral position.
- Lift the extended leg off the floor, while engaging the glutes and the abdominals to maintain a flat back.
- Hold for a count of 1 and then return to the starting position.

SL Squats



- Stand with feet shoulder width apart, toes pointing forwards, back erect, and head in a neutral position.
- Engage the glutes and abdominals to brace the core.
- Squat down until the thigh is parallel to the floor while maintaining a neutral head position and knee aligned over the foot.
- Extend the other leg in front of the body without letting it touch the floor.
- Return to the starting position by pressing the foot into the floor, extending the hip and knee while maintaining the integrity of the upper body.



T-Push-Ups



- Take a position with hands flat on the floor shoulder width apart, back straight and head neutral.
- Engage the glutes and abdominals to brace the core and maintain a stable position.
- Engage the pecs to stabilize the shoulder and lower the body to the floor until arms reach a 90° angle.
- Push back up to the starting position forcefully, while maintaining the integrity of the upper body.
- Continue by rotating one side of the body upward and lift the arm over the shoulder.
- Lower the hand back down and repeat the exercise on the opposite side.



SL Deadlifts

- Stand erect with feet underneath the hips.
- Screw one foot into the floor and engage the glutes and abdominals to brace the core.
- Hinge at the hips reaching back with the opposite leg and keeping a straight line with the torso.
- In slow and controlled manner, return to the starting position.



Dead Bug

- Lie supine on the floor with hands up reaching towards the ceiling.
- Raise the knees such that there is a 90° angle of the knees and hips.
- Lower the left leg and arm towards the floor while raising the right arm above the head.
- Return to the starting position and repeat on the opposite side.

TECHNIQUE LIFTING

Squats



- Stand with feet shoulder width apart, toes pointing forwards, back erect, and head in a neutral position.
- Squeeze the shoulder blades together creating a shelf for the barbell.
- Screw the feet into the floor, engage the glutes and abdominals to brace the core, and imagine bending the barbell with the hands creating a stable upper body position.



- Squat down until the thighs are parallel to the floor while maintaining a neutral head position and knees aligned over the feet.
- Return to the starting position by pushing your heels into the floor, extending the hips and knees while maintaining the integrity of the upper body.

Deadlifts



- Stand with feet shoulder width apart, toes pointing forwards, back erect, and head in a neutral position.
- Squat down, lower the shoulders and grasp the barbell in an overhand grip with hands slightly wider than shoulder width and outside the knees, back flat, shoulders slightly in front of the barbell.
- Engage the glutes and abdominals to brace the core.



- Forcefully lift the barbell off the floor by extending knees and hips and lifting chest upwards until standing fully erect.
- Keep the barbell as close to the shins / body as possible during the lift.
- Lower the barbell by flexing knees and hips while maintaining the integrity of the torso (flat back, do not bent forwards).

Front Squats



- Stand with feet shoulder width apart, hold the barbell across the front of the shoulders with an overhand grip, and lift the upper arms until they are parallel with the floor, resting the barbell on the shoulders and hands.
- Screw the feet into the floor, engage the glutes and abdominals to brace the core.
- Squat down until the thighs are parallel with the floor while maintaining a neutral head position, and knees aligned over the feet.
- Return to the starting position by pressing the feet into the floor, extending the hips and knees while maintaining the integrity of the upper body.



Drop Squats



- Stand erect with feet shoulder width apart, hands grasping the bar with an overhand grip, shoulder width apart.
- Lower shoulders until the bar is above slightly bent knees.
- Forcefully extend the knees, push the hips forward, and lift the bar between waist and shoulder height.
- Dynamically drop underneath the bar in a low squat position with hips lower than 90°, head neutral, chest up and out, bar resting on shoulders and upper arms parallel to the floor.

High Pull



- Stand erect with feet flat on the floor between hip and shoulder width apart, toes pointed forwards.
 - Squat down with the hips, lower the shoulders and grasp the bar with an overhand grip with hands slightly wider than shoulder width and outside the knees, back flat, chest up and out, shoulders slightly in front of the bar and a neutral head position.
 - Contract the abdominals, holding the back in place and not allowing it to round.
 - Forcefully lift the bar off the floor by extending knees and hips, and lifting the chest upwards until standing fully erect.
- The lift needs to be forceful enough so that the bar continues upwards with the elbows pointing out towards the sides, until just under the armpit.
 - Lower the bar in a controlled manner.

PLYOMETRIC

Front / Back Hops



- Stand erect with knees slightly bent, arms at sides, and head neutral.
- Lean slightly forward to shift the weight to the balls of the feet, then hop forwards approx 8 cm.
- Upon the feet coming in contact with the floor, immediately get your balance and hop backwards approx 8 cm.
- One rep consists of a hop forwards and backwards.
- Continue until the prescribed reps have been completed.

Side to Side Hops



- Stand erect with knees slightly bent, arms at sides, and head neutral.
- Lean slightly forwards to shift the weight to the balls of the feet, then hop sideways (left) approx 8 cm.
- Upon the feet coming in contact with the floor immediately get your balance and hop sideways (right) approx 8 cm.
- One rep consists of a sideways hop to the left and one to the right.
- Continue until the prescribed reps have been completed.

Tuck Jumps



- Stand erect with knees slightly bent, hands slightly back, head neutral and eyes focused straight ahead.
- Flex the hips, knees and ankles and lean slightly forward to shift the weight to the balls of the feet.
- Then forcefully extend the hips, knees and ankles and explode upwards into the air pulling the knees to the chest at the peak of the jump.
- Extend the legs to land back on the floor.
- Upon the feet coming in contact with the floor immediately get your balance and complete another jump.

Alternating Jumps on Step



- Stand erect and parallel with a step or box and place your entire left foot on the step.
- Flex the hips, knees and ankles and slightly lean forwards.
- Forcefully extend the hip, knee and ankle of primarily the left leg jumping in the air such that the right leg land on the step and the left leg land on the floor.
- Upon the foot coming in contact with the floor immediately get your balance and complete another jump.

MOBILITY

Plantar Surface Smash



- Stand erect with feet flat on the floor, arms hanging by the sides and one lacrosse type ball under the heel of one foot.
- Apply as much pressure on top of the ball that can be tolerated and slowly move the heel side to side, then forwards and backwards.
- Progressively move the contact position of the ball underneath the foot towards the toes in approximately 2 cm increments and repeat the movements.

Calf Smash



- Sit on the floor with legs straight out in front, torso erect, and leaning back at approximately 45° with hands on the floor behind the torso.
- Position a foam roller underneath the heel cord (Achilles tendon) of one leg and cross the opposite leg over top.
- Apply pressure with the top leg and slowly move the bottom leg side to side, then forwards and backwards.
- Progressively move the contact position of the foam roller underneath the leg towards the knee in approximately 5 cm increments and repeat the movements.

Lateral Anterior Compartment Smash



- Take a position on the floor on all fours with palms flat on the floor and shoulder width apart.
- Position one lacrosse type ball underneath the outside of one shin.
- Move your centre of mass forwards or backwards to adjust the pressure on the ball.
- Slowly work across the tissue by moving the leg over the ball forwards and backwards.
- Stop at any uncomfortable areas and move the foot in all directions until the discomfort has lessened, then continue.

Adductor Smash



- Lie face down on the floor on top of the hands with one leg extended and the other bent such that there is a 90° angle at the hip and knee joints.
- Position the foam roller underneath the knee of the bent leg and create pressure by driving the hip towards the floor.
- Slowly move the leg side to side and forwards and backwards along the length of the adductors.

Quad Smash and Move



- Lie face down on the floor on top of the forearms, with elbows directly underneath the shoulders, one leg extended and a foam roller positioned underneath one quadriceps (thigh muscle) directly above the knee, perpendicular to the body.
- Slowly roll side to side, then forwards and backwards.
- Stop at any uncomfortable areas and pull the heel towards the buttock and return to the starting position, and repeat until the discomfort has lessened, then continue.
- Progressively move the contact position of the foam roller underneath the quadriceps towards the groin in approximately 5 cm increments and repeat the movements.
- Repeat this process for the inner and outer parts of the quadriceps.

Couch Mobilization



- Take a position on all fours with the feet backed up against a box (or wall).
- Slide one leg back driving the knee into the corner, engage the glutes to support the lower back and move the other leg such that the foot is flat on the floor and the knee is bent to 90°.
- Move the hip towards the floor and lift the torso into an upright position.
- If an upright position cannot be achieved, position a box or chair in front for additional stability or keep the palms on the floor.



Hamstring Smash and Move

- Sit erect on a box with knees bent at approximately 90° with one lacrosse type ball positioned underneath one leg.
- Shift as much weight as possible on to the ball and move side to side then forwards and backwards.
- Stop at any uncomfortable areas and then repeatedly extend and flex the leg until the discomfort lessens, then continue.



Iliotibial (IT) Band Smash



- Lie on the floor on one side with the hands directly underneath the shoulders, the bottom leg extended and top leg bent and crossed over top of the bottom leg with the foot flat on the floor.
- Position a foam roller underneath the hip.
- Apply pressure on the foam roller and slowly roll along the leg until the foam roller reaches just above the knee.
- Roll back to the starting position.





Hip Exertnal Rotation with Flexion

- Sit on the floor with one leg out in front of the body making a 90° angle at the hip and knee joints.
- Put the opposite leg behind the body making a 90° angle at the hip and knee joints.
- Secure the font leg in place by holding the foot and the knee.
- Lean forwards until there is a stretch and hold for 2 sec.



Glute Smash and Move

- Sit on the floor such that the torso is at a 45° angle, knees are bent to approximately 90° and the hands on the floor behind the torso.
- Position a lacrosse type ball under the glute and externally rotate the leg dropping the knee to the floor.
- Slowly move side to side, then forwards and backwards.
- Stop at any uncomfortable areas and repeatedly contract / relax the glutes until the discomfort lessens, then continue.

Oblique Side Smash



- Lie on the floor on one side with the elbow directly underneath the shoulder and the top leg bent.
- Position a foam roller underneath the oblique between the ribcage and the hip.
- Slowly roll side to side and twist the torso over the foam roller.
- Progressively move the contact position of the foam roller underneath the side until all of the tissue has been worked.



Overhead Tissue Smash

- Lie on the floor on one side with the bottom leg extended and the top leg bent.
- Position one lacrosse type ball underneath the lower end of the arm pit.
- Slowly roll side to side and then oscillate around the area.

Low Back Smash



- Lie supine on the floor with the lower legs on a box (or chair) such that the knee and hip joints are at approximately 90°.
- Position a lacrosse type ball under one side of the lower back just above the hip.
- Slowly move side to side.
- Readjust the position of the ball underneath the lower back until all of the tissue has been attended to.

Shoulder Rotator Smash and Move



- Lie supine on the floor with the knees bent, with one arm bent at 90° and elevated above the head.
- Position a lacrosse type ball underneath the shoulder just above the armpit of the elevated arm.
- Slowly internally rotate the hand such that the palm is touching the floor.
- Slowly return to the starting position.

T-Spine Smash Extension with Side to Side



- Lie supine on the floor with feet flat, knees bent at 90° and arms wrapped around the chest.
- Position a foam roller underneath the back at the base of the rib cage.
- Progressively move the foam roller up the back towards the head in small increments.
- To increase spinal extension engage the glutes and elevate the hips.
- Stop at any particularly stiff areas and slowly roll side to side.

Trap Scrub



- Lie supine on the floor with feet flat, knees bent at 90° and arms at the sides.
- Position a lacrosse type ball into the trapezius, just above the shoulder blade between the neck and the shoulder.
- Raise both arms up and reach towards the ceiling.
- Rotate the upper body side to side.

Anterior Compartment Smash



- Lie face down on the floor with legs extended, one arm behind the back and the other on the floor.
- Position a lacrosse type ball underneath the chest just below the shoulder of the arm that is behind the back.
- Slowly move side to side, then forwards and backwards.
- Stop at any uncomfortable areas and place the other arm behind the back until the discomfort lessens then continue.

Triceps Extension Smash and Move



- Stand erect in a squat rack with the barbell height set such that the barbell is between the nipples and the armpit with one arm resting on the barbell and the other hand holding the barbell.
- Position the arm on the barbell such that the head of the triceps (directly above the elbow joint) is on the barbell with the arm bent.
- Slowly move the arm side to side.
- Stop at any uncomfortable areas and slowly bend and straighten the arm then move the arm side to side until the discomfort lessens, then continue.
- If a squat rack and barbell is not available this exercise can be performed lying face down on the floor using a lacrosse type ball.

MOVEMENT PREPERATION



Squat to Stand

- Stand erect with feet flat on the floor, shoulder width apart, head neutral, chest up and out and arms hanging by the sides.
- Engage the glutes and abdominals to brace the core.
- Grasp the feet underneath the big toes.
- Flex the knees and hips such that a squatting position is achieved.
- Return to the straight legs position holding the toes.



Frog Squat

- Stand erect with feet flat on the floor, slightly wider than shoulder width apart, head and spine neutral.
- Squat down as deep as possible with the hips back and heels staying on the floor.
- Place the elbows inside of the knees with the hands together and press the legs outwards.
- Pause for a count of 3 and return to the starting position.



Supine Bridge

- Lie supine on the floor with feet flat on the floor, heels pulled up to the butt, arms resting on the floor by the sides, and head back in a neutral position.
- Engage the glutes and raise the hips off of the floor.
- Engage the abdominals to maintain a straight back.
- Hold for a count of 1 and then return to the starting position.



SL Adductor Dips

- Kneel on the floor with the torso erect and externally rotate one leg perpendicular to the body such that the knee is bent to approximately 90° and is pointing to the side.
- Engage the glutes and abdominals to brace the core.
- Slowly lunge to the side until there is a comfortable stretch and pause for a count of 1.
- Return to the starting position.



Spiderman with Overhead Reach

- Stand with feet shoulder width apart, arms hanging at the sides, back erect and head in a neutral position.
- Take a big step with one leg in front of the body such that there is a 90° angle at the knee and the opposite leg is straight.
- Place one hand on the ground beside the front foot.
- Twist the body and rotate the torso with the other arm reaching to the ceiling.



Split Stance Adductor Mobilization

- Assume a quadrupedal position on a floor with the hands underneath the shoulders and the knees directly underneath the hips.
- Abduct one leg out to the side until there is a light stretch in the adductors (inner thigh).





- Engage the abdominals to maintain the correct posture.
- Slowly sit back onto the heel of the bent leg and return to the starting position.

Pullovers



- Lie supine on the floor with straight legs and arms extended overhead.
- Engage the abdominals pulling the ribcage down and bracing the core.
- Keep the arms straight and in a controlled and smooth manner pull the arms up to the ceiling and then down to the sides.
- Reverse the movement to return to the starting position.



Scapular Wall Slides

- Stand against a wall with feet shoulder width apart and the back flat against the wall.
- Place the arms against the wall with the palms facing out creating a 90° angle at the shoulder and elbow joints.
- Engage the abdominals and pull the ribcage down bracing the core.
- In a controlled and smooth manner slide the arms up to the ceiling while maintaining contact with the wall.
- Slowly slide the arms back into the starting position.

Roller Angels



- Take a position on the floor with the legs bent and feet flat on the floor and lying lengthwise on a foam roller supporting the spine.
- Place the hands by the sides with the palms facing the ceiling.
- In a controlled and smooth manner move the arms out to the sides, above the shoulders until they touch above the head.
- Return to the starting position following a reverse of the movement.

Roller Alternating Flexion/Extension



- Take a position on the floor with the legs bent and feet flat on the floor and lying lengthwise on a foam roller supporting the spine.
- Place the hands by the sides with the palms facing down.
- Raise one arm up over the head leaving the other arm by the side.
- In a controlled and smooth manner switch positions of the arms.

Elbow Push-Ups



- Take a position with forearms on the floor, elbows directly underneath the shoulders, and with palms facing each other.
- Form a straight line with the body, shoulders back, chest slightly out and head neutral.

- Brace the core by engaging the abdominals and squeezing the glutes and lower the upper body down to the floor.
- Return to the starting position.



SA Windmill

- Lie on the floor on one side with the arms extended out in front of the face, the bottom leg straight and the top leg bent at 90° on top of a foam roller.
- Make a windmill motion with the top arm reaching above the head, opening the chest and rotating the upper body.
- Follow the path of the arm with the eyes.
- Rotate the arm back to the starting position.



Inch Worm

- Hands on the floor and straight legs as close as possible to the hands.
- Engage the abdominals and walk the hands forward to a push-up position while keeping the legs straight.
- Maintain straight legs and walk the feet back up to the hands.

Quadruped Extension/Rotation



- Take a position on all fours on the floor with the hands directly underneath the shoulders and the knees directly underneath the hips.
- Place one hand on the back of the head with the thumb slightly above the ear, elbow relaxed at the side.



- Rotate the thoracic spine such that the shoulder and elbow move internally (towards the heart).



- Next rotate the thoracic spine in the opposite direction such that the shoulder and elbow reach towards the ceiling.
- Return to the starting position.

REGENERATION

Lying Calf Stretch



- Lie supine on the floor with both legs straight and a strap wrapped around one foot.
- Pull on the strap keeping the leg straight until the leg is at approximately 45°.
- Keep the uninvolved leg straight on the floor.
- Pull the toes towards the shin and stretch the calf by gently pulling on the strap for 2 sec.



Lying Hamstring Stretch

- Lie supine on the floor with both legs straight and a strap wrapped around one foot.
- Pull on the strap keeping the leg straight until there is a light stretch.
- Keep the uninvolved leg straight on the floor.
- Gently pull on the strap and stretch the hamstring for 2 sec.



Lying IT Band/Glute Stretch

- Lie supine on the floor with both legs straight and a strap wrapped around one foot.
- Hold the strap in the opposite hand of the leg that is being stretched.
- Pull the involved leg across the body until there is a light stretch.
- Keep the uninvolved leg straight on the floor.
- Gently pull on the strap and stretch the glutes for 2 sec.



Lying Adductors Stretch

- Lie supine on the floor with both legs straight and a strap wrapped around one foot.
- Hold the strap in the hand of the leg that is being stretched.
- Pull the involved leg away from the body until there is a light stretch.
- Keep the uninvolved leg straight on the floor.
- Gently pull on the strap and stretch the groin for 2 sec.



Lying Quadriceps Stretch

- Lie prone on the floor with legs straight and a strap wrapped around one foot.
- Grab the strap over the shoulder and pull the involved leg upward.
- Engage the glute and hamstring muscles to stretch the quadriceps.
- Gently pull on the strap and stretch the quadriceps for 2 sec.



Hip Exertnal Rotation with Flexion

- Sit on the floor with one leg out in front of the body making a 90° angle at the hip and knee joints.
- Put the opposite leg behind the body making a 90° angle at the hip and knee joints.
- Secure the font leg in place by holding the foot and the knee.
- Lean forwards until there is a stretch and hold for 2 sec.



Olympic Wall Squat with External Rotation

- Lie supine on the floor close to a wall.
- Positon the glutes as close as possible to the wall and assume a squat stance with feet slightly wider than shoulder width apart.
- Place the ankle on top of the knee of the opposite leg.
- Gently put pressure on the knee of the involved leg to stretch the hips and glutes for 2 sec.



Reach Roll and Lift

- Kneel behind a Swiss ball with arms extended on the ball and palms up.
- Roll the ball forward and drop the hips backward letting the chest drop toward the floor.
- Attempt to lift the hands off of the ball and hold for 2 sec.

Quadruped Extension/Rotation



- Take a position on all fours on the floor with the hands directly underneath the shoulders and the knees directly underneath the hips.
- Place one hand on the back of the head with the thumb slightly above the ear, elbow relaxed at the side.
- Rotate the thoracic spine such that the shoulder and elbow move internally (towards the heart).
- Next rotate the thoracic spine in the opposite direction such that the shoulder and elbow reach towards the ceiling.
- Return to the starting position.

SA Windmill



- Lie on the floor on one side with the arms extended out in front of the face, the bottom leg straight and the top leg bent at 90° on top of a foam roller.
- Make a windmill motion with the top arm reaching above the head, opening the chest and rotating the upper body.
- Follow the path of the arm with the eyes.
- Rotate the arm back to the starting position.

Shoulder Flexion



- Kneel in front of a bench holding a dowel in the hands with the elbows as close together as possible to the edge of the bench and spread the hands as far apart as possible.
- Drop the hips backwards letting the chest fall towards the floor and slowly lower the arms towards the floor.

Triceps Stretch



- Stand erect with feet shoulder width apart holding a strap in one hand.
- Put the hand holding the strap behind the head with the elbow pointing towards the ceiling.
- Grasp the strap with the opposite hand behind the lower back with the palm facing out.
- Gently pull on the strap and stretch the triceps for 2 sec.





CBRN OPERATOR



PERSONAL TRAINING LOGS

5

CBRN OPERATOR
PRE-SELECTION PHYSICAL FITNESS TRAINING PROGRAM



**INSTRUCTIONS FOR COMPLETING
THE PERSONAL TRAINING LOG**

There are four **Workout Logs** on the front and back of each sheet in this section. Use one Workout Log for each training session. Complete each Recording Form as follows: (see sample at right)

BLOCK A

- Note the Program **Week** and **Day**, and the actual Date of the workout.

BLOCK B: AEROBIC / ANAEROBIC

- Check if you did the prescribed program. - **OR** -
- Record the distance(s) and the time (sec) of your run(s).

BLOCK C: STRENGTH

- Check if you did the prescribed program.
- Indicate the **Routine** and **Circuit Number** (e.g. # and Core #) in the top row.
- In succeeding rows, list the **Exercises** performed along with the **Load** (L) and **Repetitions** (R) for each set completed.

BLOCK D: SWIM

- Check if you did the prescribed program. - **OR** -
- Record the distance(s) and the time (sec) of your swim(s).

BLOCK E: SPEED AND POWER

- For Plyometrics, indicate the number of times the circuit was **Repeated**.
- For Sprints, indicate the **Distances** in the set and number of sets **Repeated**.

PERSONAL TRAINING LOG

A Week 4 Day 3 Date June 7

B AM • AEROBIC / ANAEROBIC

As Prescribed or:

Distance(s) km									
Times (sec)									

C PM • STRENGTH

As Prescribed or:

# _____	Set 1		Set 2		Set 3		Set 4	
List Exercise:	L	R	L	R	L	R	L	R
Core # _____								
List Exercise:								

D SWIM

As Prescribed or:

Distance(s) km									
Times (sec)									

E SPEED AND POWER

Plyometrics	Number of Reps <input type="checkbox"/>								
Sprints	Number of Sets <input type="checkbox"/>								
Distance(s) m									

CBRN OPERATOR
PRE-SELECTION PHYSICAL FITNESS TRAINING PROGRAM

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Week ____ Day ____ Date _____

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Core # _____ List Exercise:								

SWIM

As Prescribed or:

Distance(s) km							
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SPEED AND POWER

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Please direct any comments or suggestions
pertaining to this manual in writing to

**CANADIAN FORCES MORALE
AND WELFARE SERVICES**

Directorate of Fitness

4210 Labelle Street
Ottawa, Ontario
K1A 0K2

