

# Physical Training Leader Guide

**Physical Health Readiness Series**

**Strength**

**Endurance**

**Flexibility**

**Injury Prevention**



**Developed by HQ AFMC/SGPO Aug 2020**



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## ACTIVITY

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***Physical Training Leader Guide was developed collaboratively by the AFMC Health Promotion Physical Health Readiness Working Group***

# INTRODUCTION

## Improving Readiness through Strengthening Musculoskeletal Injury Prevention and Physical Performance Practices

The top priority of the National Defense Strategy is to restore military readiness. Musculoskeletal injuries are the number one threat to military readiness, and leading cause of lost duty days, medical encounters, and the inability to deploy for U.S. service members (DHA Medical Surveillance Monthly Report, July 2018). Physical training and sports activities (on and off duty) have been identified as the leading cause of injuries among service members.

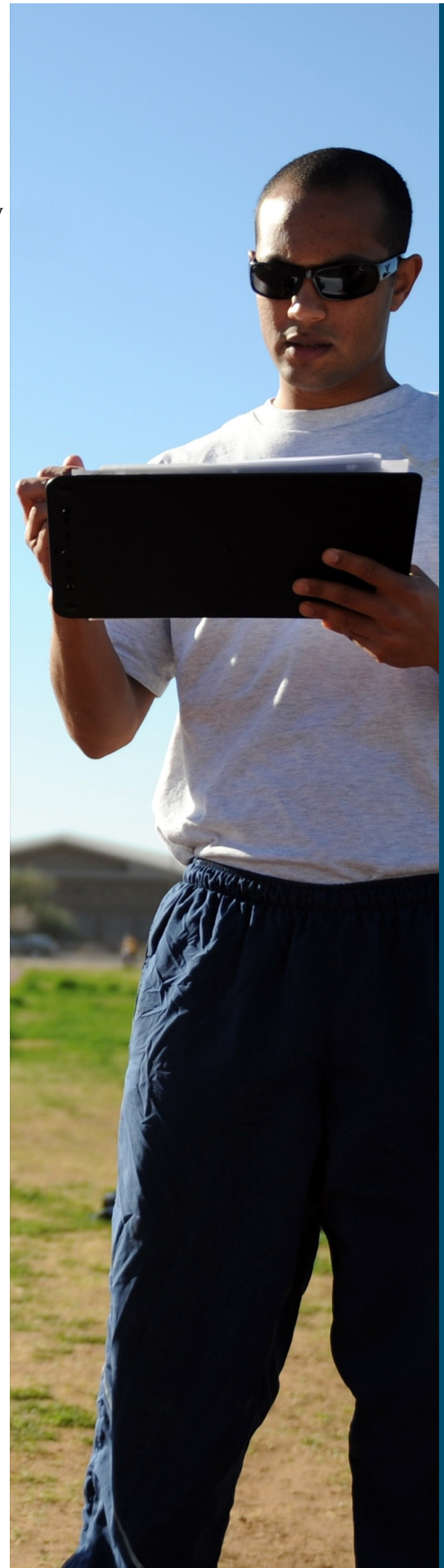
The goal of the Air Force Materiel Command physical training program is for Airmen to establish a solid foundation of fitness and strength, building up over time to allow for pain-free participation. Doing too much too quickly or exercising for too long, especially after little to no physical activity, can lead to injuries. Injuries can also happen as a result of technique errors, such as poor form during strength training exercises.

Gradually starting a workout routine can help Airmen get into shape without putting too much stress on muscles and joints. Workouts should involve a mix of movements and intensities in order to build power, strength, and endurance. Recovery time is essential for injury prevention when working out consistently. Without proper rest and recovery, the body eventually becomes overloaded and fatigued, becoming more susceptible to injury.

The AFMC Physical Training Leader Guide is designed to provide PTLs with basic fitness principles, examples for leading safe and effective unit exercise sessions, and the ability to evaluate potentially unsafe exercise programs. Caution is necessary when leading group exercise to a diverse crowd and safety must be the constant theme. It is incumbent upon you as a PTL to take responsibility for those you are leading, and be aware of members with physical limitations or fitness profiles.

This training guide is to be used in combination with the **MissionFit mobile app**. The app is an evidence-based physical training toolkit to enhance readiness and mitigate risk of future musculoskeletal injury. The app was developed by The United States Air Force 711<sup>th</sup> Human Performance Wing Research Physiologists.

The MissionFit app is a free instructional based application that can be installed on your cellular device or computer. Available for Android and IOS devices in the app store.

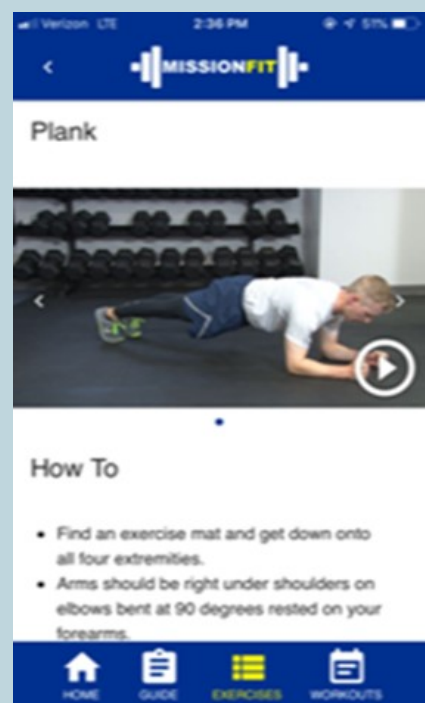
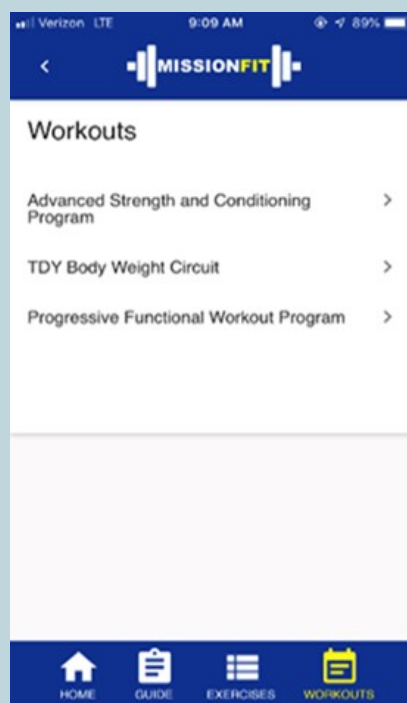




MissionFit uniqueness compared with other fitness apps:

- Designed for USAF active duty
- Progressive strength and conditioning programs developed by subject matter experts
- Exercises combined in the proper way to prevent injuries and safely progress individuals
- Technique instruction with videos
- Not a RANDOM program! There are scientific/medical reasons that each exercise was chosen and combined
- Form and technique is key to injury prevention and increasing performance

Unit PTLs should use this app for education and guidance on implementing a structured physical training program into their group physical training sessions. The app provides exercise programs and explains the purpose of the program. The app delivers instructional videos, pictures, descriptions, and an entire library of exercises. Example screenshots from the app are shown below:



# PRECAUTIONS

## Universal Training Precautions (UTPs) for Physical Conditioning

The following UTPs need to be applied to physical conditioning sessions or fitness tests that are expected to require moderate exertion (heavy breathing but able to talk in full sentences, sweating within a few minutes of start):

1. Allow acclimatization of approximately 2 to 4 weeks to adapt to a warmer environment or higher altitude. Reduce aerobic activity (lower intensity, no more than 30 min bouts) and strength training exercise for first 5-7 days
2. Ensure progressive and graduated increases in exercise duration and intensity
3. Adhere to current guidelines for hydration, promote water consumption
  - a. Exercise up to one hour: drink water 3-8 oz every 15 minute (gulp is 1-2 oz)
  - b. Review <https://www.hprc-online.org/articles/hydration-basics> for hydration basics
4. Follow DoD guidelines for work/rest cycles as described at: <https://phc.amedd.army.mil>
5. Prior to and during exercise, avoid stimulants, alcohol, energy shots or drinks, diuretics, pre-workout products, weight loss and performance enhancing supplements
6. After physical training sessions or fitness assessment, participants should be observed for 10 minutes
7. At early signs of distress, provide prompt medical attention, and, transfer to an appropriate level of medical care

### Exercise and Heat Stress Risk Factors

1. Exercising or working in the sun on a hot, humid day
2. Dehydration (not having enough fluids in the body)
3. Poor physical fitness or lack of experience exercising in the heat or outdoors
4. Obesity/Overweight
5. Exercise clothing that is tight, dark, or heavy
6. Use of dehydrating beverages (caffeine, alcohol, energy drinks)
7. Current illness/fever
8. Prior history of heat-related illness

### Exercise Warnings Signs

1. Abnormal heart beat: irregular pulse, rapid or fluttering heart rate, or sudden increase or decrease of pulse rate during exercise.
2. Heavy pumping or strongly felt palpitations in the throat or chest (beyond normal exercise feeling)
3. Dull pain, ache, or heavy pressure in the middle of the chest before, during, or after exercise
4. Abnormal shortness of breath
5. Sudden pain or numbness in any part of the body (especially in the left arm)
6. Pain or heart burn in region of the upper abdomen
7. Extreme dizziness, sudden loss of coordination, cold sweat or loss of consciousness
8. Temporary loss of speech or vision

### Recognizing Overtraining

1. Excess fatigue when running, even on the “easy” days
2. Poor workout performance, may be first cardiovascular signs
3. Disturbance in sleep patterns
4. Feeling sleepy during the day
5. Loss of appetite
6. Upset stomach
7. Weight loss
8. Irritable
9. Increased respiratory infections
10. Stiffness, soreness, tenderness in muscles or joints that doesn't let up



## PRINCIPLES

### Principles of Physical Training

FITT - Frequency – Intensity – Time – Type

- Frequency: Number of sessions per week
- Intensity: Level of difficulty of the exercise
- Time: Duration of exercise session
  - Less Time = Higher Intensity
  - More Time = Lower Intensity
- Type of Activity: Specific exercise modality
  - Cardio
  - Strength
  - Flexibility/Mobility

### Fitness Principles

- Specificity -----> Job or Goal Specific
- Progression/Overload -----> General rule is 10% per week
  - 1) Initial Stage: 4-6 weeks (Beginners)
  - 2) Improvement Stage: 4-5 months (Intermediate)
  - 3) Maintenance Stage: >6 months (Advanced)
- Regularity / Reversibility --> Use it or lose it
- Variety/Balance -----> Keep Changing and Challenging
- Recovery -----> Time, Nutrition and Sleep

### Fitness Principles – Workout Components

- Preparation
  - Dynamic Warm-up
- Activity
  - Cardio / Aerobic
  - Strength / Anaerobic
- Recovery
  - Cool-Down
  - Stretching / Flexibility / Mobility

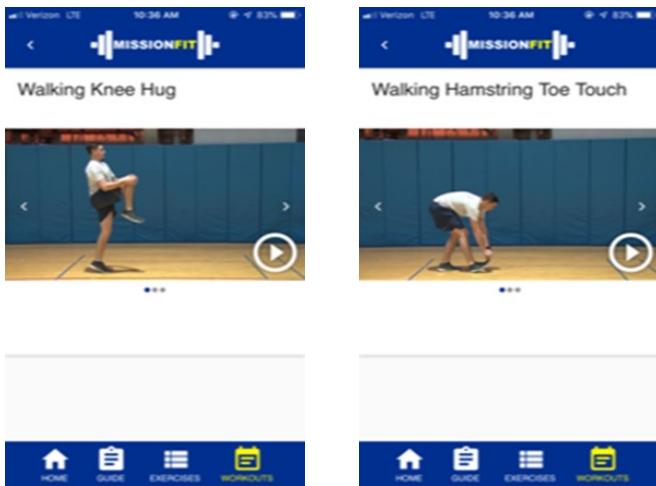


# PREPARATION

## Dynamic Warm-up

- A series of movements/drills performed in a progressive, deliberate sequence from low to moderate intensity
- The purpose of a dynamic warm-up is to increase blood flow to working muscles, wake up the nervous system to prepare for a workout, and take the muscles through all planes of motion

## Examples of Dynamic Warm-up using MissionFit App:



## Dynamic Warm-up Guidelines

- Complete 5-10 minutes of low to moderate aerobic and muscular activity (3-5 exercises for :30 sec to 1 minute)
- Target all major muscle groups
- Mimic main workout movement patterns at lower intensity and/or lower speeds
- Break a light sweat

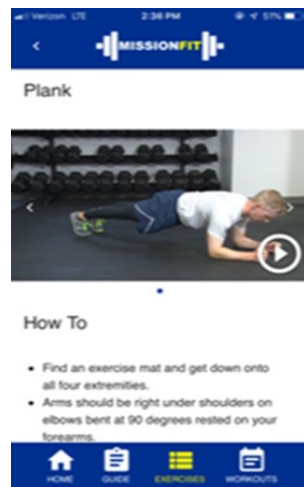
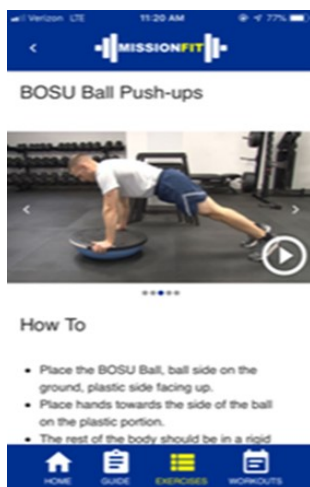
<b>Dynamic Warm-up/ Movement Prep (~10 min, 10 yards each drill) Example:</b>
Jog
Walking Knee Hug/ Quad Stretch Reach Out
Lunge to Side Bend/ Walking Hamstring Toe Touch
Jumping Jacks
Arm Circles

# ACTIVITY

## Strength Training

- Progressive Resistance Training – gradually advance the training parameters for continued strength development
- Overload – stress on a muscle
- Arrangement of exercise- usually large movements using multi-joint exercises or in reference to need
- Program design and focus is on training movement patterns, instead on specific body parts, using multi-joint movements that work through multiple planes of motion

## Examples of Strength Training Exercises using the MissionFit App:



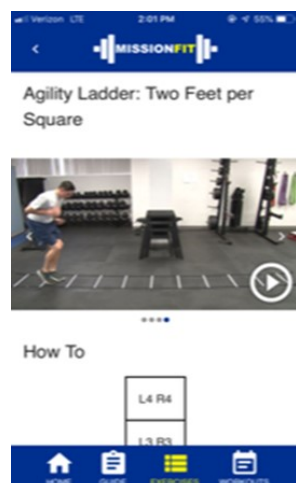
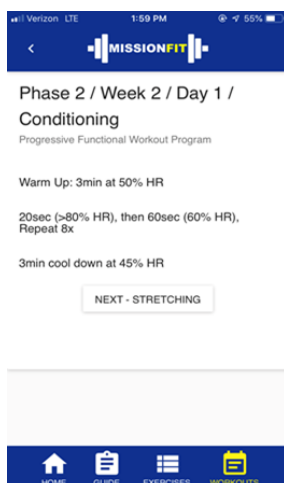
## Strength Training Guidelines:

- Frequency: 2-3 days/week allowing for a minimum of 48 hours between training sessions using the same muscle groups
- Intensity: 1-3 Sets of 8-12 repetitions per exercise
- Time: Slow controlled movement
- Type: Full body workout session: upper/core/lower body using both bodyweight and free weights

## Conditioning

- Focus on cardiorespiratory endurance, but also anaerobic endurance and improving time
- Excessive running is not necessary to improve 1.5 mile run times
- Incorporate intervals, steady state cardio, and agility running
- Modify mode of exercise as needed for injuries/pain
- Interval training is an alternate approach to long slow duration training. This involves alternating between short intense bouts of exercise and periods of true recovery

## Examples of Conditioning and Agility Activities using the MissionFit App:



## Cardio/Aerobic Endurance Guidelines

- Frequency: 3-5 days/week
- Intensity: 60-85% of max Heart Rate
- Time: 20-60 minutes
- Type: Walking, running, cycling, swimming



# RECOVERY

## Recovery/Cool-down

- Provides a gradual recovery from activity
- Decreases heart rate and breathing to safe pre-exercise levels

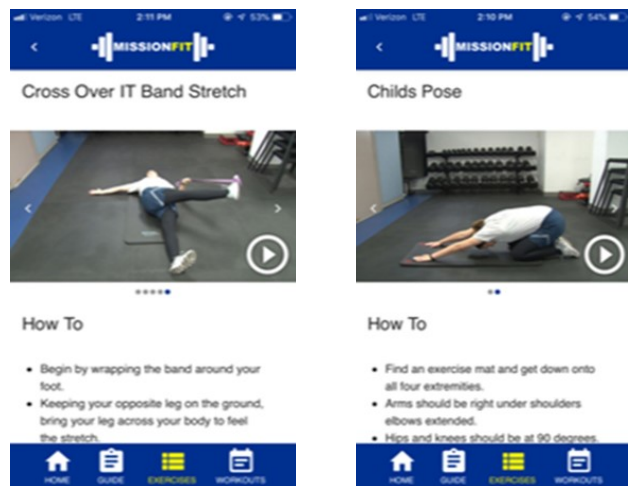
## Recovery/Cool-down Guidelines

- Frequency: Following every exercise session
- Intensity: Gradually decrease activity to pre-exercise level
- Time: 5-10 Minutes
- Type: Walk, lower cadence on bike, etc.

## Flexibility/Stretching

- Static stretching at end of workout to improve range of motion

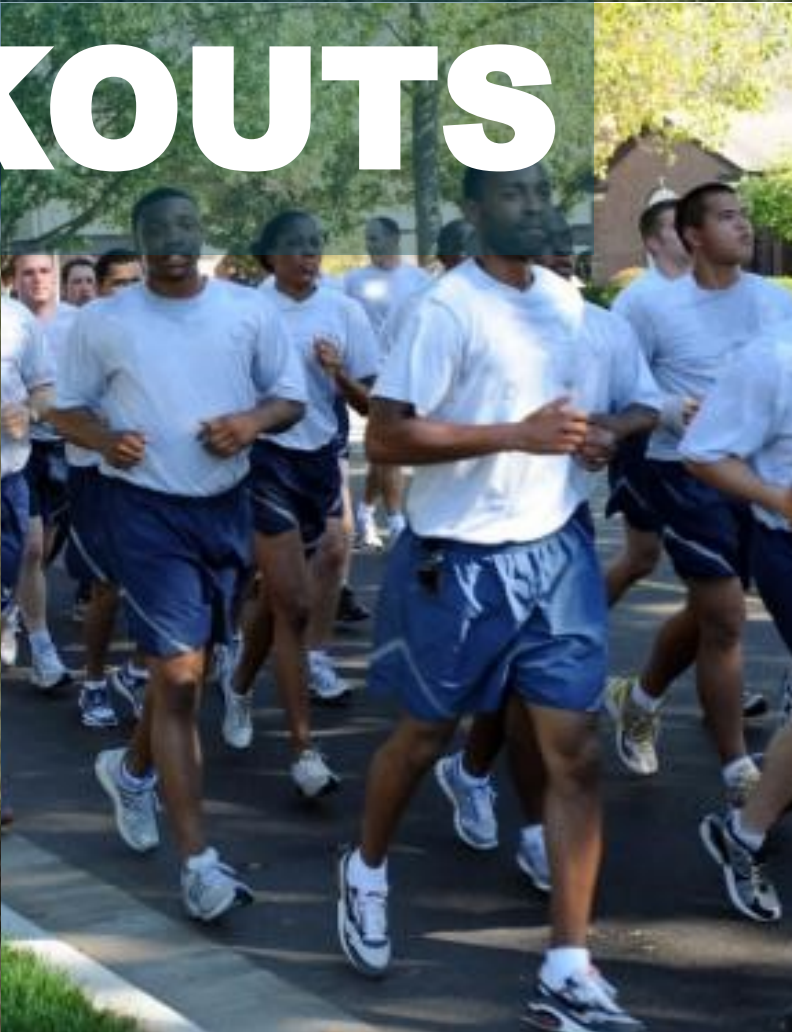
## Examples of Stretching Exercises using the MissionFit App:



## Flexibility/Stretching Guidelines

- Frequency: Following a workout or after a proper warm-up
- Intensity: Hold stretch to point of mild tension, NOT pain
- Time: 10-30 seconds
- Type: Minimum of one stretch for each major muscle; extra attention to areas that are tight





# PHYSICAL TRAINING WORKOUTS

# UNIT PHYSICAL TRAINING DYNAMIC WARM UP

**JOG**



**ARM CIRCLES**



**WALKING KNEE HUG**



**QUAD STRETCH REACH OUT**



**LUNGE TO SIDE BEND**



**JUMPING JACK**



**WALKING HAMSTRING**



**BUTT KICKS**



**HIGH KNEES**



# UNIT PHYSICAL TRAINING STRENGTH WORKOUT #1

**PUSH UPS**



**BODY WEIGHT SQUAT**



**DONKEY KICKS**



**GLUTE BRIDGE**



**CRUNCH**



**SUPERMANS**



**BURPEE**



**SINGLE LEG ROMANIAN DEAD LIFT**



**FIRE HYDRANT**



# UNIT PHYSICAL TRAINING STRENGTH & CONDITIONING WORKOUT #1

<b>DYNAMIC WARM UP/MOVEMENT PREP (~10 min, 10 yards each drill)</b>		
Jog ~5 min		
Walking Knee Hug/ Quad Stretch Reach Outs		
Lunge to Side Bend/Walking Hamstring Toe Touch		
Jumping Jack		
Butt Kicks/ High Knees		
<b>STRENGTH TRAINING</b>		
Bodyweight Exercise	Level 1	Level 2
Push Up	8-10 repetitions	12-15 repetitions
Body Weight Squat/Squats	8-10 repetitions	12-15 repetitions
Donkey Kicks	8-10 reps each leg	12-15 reps each leg
Glute Bridges	8-10 repetitions	12-15 repetitions
Crunch	8-10 repetitions	12-15 repetitions
Superman	8-10 repetitions	12-15 repetitions
Burpees	5-8 repetitions	10-12 repetitions
Single Leg Romanian Deadlift (no weight)	8-10 reps each leg	12-15 reps each leg
Fire Hydrant	8-10 reps each leg	12-15 reps each leg
Level 1 - complete 1-2 rounds of the strength training circuit with members moving at their own pace		
Level 2 - complete 2-3 rounds of the strength training circuit with members moving at their own pace		
When you are proficient at performing the Level 1 recommended repetitions with optimal form, it is time to push yourself to the Level 2 Strength Training Exercises		
<b>CONDITIONING</b>		
Gradually increase your running time and intensity- too much, too soon increases the risk of injury		
Workout #1: Level 1 – Run/Jog 10-15 minutes	Level 2 – Run/Jog 20-30 minutes	
Cool Down 3-5 Minute Walk		
<b>RECOVERY/STRETCHING (all 2x 20 sec)</b>		
Pigeon Pose		
Cross Over IT Band Stretch		
Groin Band Stretch		
Hamstring Band Stretch		
Childs Pose		
Dog Down Calf Stretch		
Quad Stretch		
Calf Raise – Level: 1 1x10 repetitions	Level 2: 1x15 repetitions	
Standing Dorsiflexion – Level 1: 1x10 repetitions	Level 2: 1 x 15 repetitions	

# UNIT PHYSICAL TRAINING STRENGTH WORKOUT #2

**INCHWORM**



**HIP CIRCLES IN**



**V-HOLD**



**PLANK**



**SWIMMERS**



**BIRD DOG**



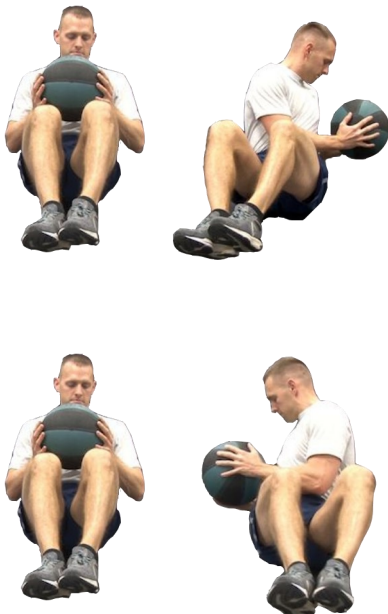
**FORWARD STEP LUNGE**



**LATERAL LEG RISE**



**RUSSIAN TWIST**



## UNIT PHYSICAL TRAINING STRENGTH & CONDITIONING WORKOUT #2

<b>DYNAMIC WARM UP/MOVEMENT PREP (~10 min, 10 yards each drill)</b>		
Jog ~5 min		
Walking Knee Hug/ Quad Stretch Reach Outs		
Lunge to Side Bend/Walking Hamstring Toe Touch		
Jumping Jack		
Butt Kicks/ High Knees		
<b>STRENGTH TRAINING</b>		
Bodyweight Exercise	Level 1	Level 2
Inchworm	8-10 repetitions	12-15 repetitions
Hip Circles In	8-10 repetitions each side	12-15 repetitions each
V-Hold	1x 30 seconds	1x 45 seconds
Plank	1x 30 seconds	1x 45 seconds
Swimmers	8-10 repetitions	12-15 repetitions
Bird-Dog; reset each time	8-10 repetitions each side	12-15 repetitions each
DB Forward Step Lunge (no weight)	8-10 repetitions each side	12-15 repetitions each
Lateral Leg Raise	8-10 repetitions each side	12-15 repetitions each
Russian Twist	8-10 repetitions	12-15 repetitions
Level 1 - complete 1-2 rounds of the strength training circuit with members moving at their own pace		
Level 2 - complete 2-3 rounds of the strength training circuit with members moving at their own pace		
When you are proficient at performing the Level 1 recommended repetitions with optimal form, it is time to push yourself to the Level 2 Strength Training Exercises		
<b>CONDITIONING</b>		
Gradually increase your running time and intensity- too much, too soon increases the risk of injury		
Level 1-Workout #1: Outside- Sprint 50 yards/Walk 50 yards – 6-8 repetitions		
Level 1-Workout #2: Inside Basketball Facility – Sprint Half Court/Walk Half Court – 6-8 repetitions		
Level 2 -Workout # 1: Outside Track- Sprint the Straights - Walk the Curves – 6-8 laps		
Level 2 –Workout #2: Inside Basketball Facility – Sprint Half Court/Walk Half Court -10-12 repetitions		
Cool Down 3-5 Minute Walk		
<b>RECOVERY/STRETCHING (all 2x 20 sec)</b>		
Pigeon Pose		
Cross Over IT Band Stretch		
Groin Band Stretch		
Hamstring Band Stretch		
Childs Pose		
Dog Down Calf Stretch		
Quad Stretch		
Calf Raise – Level: 1 1x10 repetitions	Level 2: 1x15 repetitions	
Standing Dorsiflexion – Level 1: 1x10 repetitions	Level 2: 1 x 15 repetitions	

# UNIT PHYSICAL TRAINING STRENGTH/PLYOMETRIC WORKOUT

## STEP UPS



## SIDE PLANK



## PLANK UP DOWNS



## SPLIT SQUAT JUMPS



## SKATER JUMPS



## LONG JUMP



## PLYO PUSH-UPS





# UNIT PHYSICAL TRAINING STRENGTH & CONDITIONING WORKOUT #3

## DYNAMIC WARM UP/MOVEMENT PREP (~10 min, 10 yards each drill)

Jog ~5 min

Walking Knee Hug/ Quad Stretch Reach Outs

Lunge to Side Bend/Walking Hamstring Toe Touch

Jumping Jack

Butt Kicks/ High Knees

## STRENGTH & PLYOMETRIC TRAINING

Bodyweight Exercise	Level 1	Level 2
Step Ups Both Feet Up and Down	6-8 repetitions each leg	10-12 reps each leg
Side Plank	1 x 30 seconds each side	1 x 45-60 seconds each
Plank Up Downs	4-6 repetitions	8-10 repetitions
Split Squat Jumps	4-6 repetitions each leg	8-10 reps each leg
Lateral Plyometrics (Skater Jumps)	8-10 repetitions each leg	12-15 reps each leg
Standing Long Jump	3-4 repetitions	5-6 repetitions
Plyometric Push-Up	6-8 repetitions	10-12 repetitions

Level 1 - complete 1-2 rounds of the strength training circuit with members moving at their own pace

Level 2 - complete 2-3 rounds of the strength training circuit with members moving at their own pace

When you are proficient at performing the Level 1 recommended repetitions with optimal form, it is time to push yourself to the Level 2 Strength Training Exercises

## CONDITIONING & AGILITY - refer to MissionFit app for proper exercise technique

Gradually increase your running time and intensity- too much, too soon increases the risk of injury

Level 1-Workout: Backward Run / 10 yards -4-6 repetitions of movement skill

Level 1-Workout: Side Shuffles / 10 yards - 4-6 repetitions of movement skill

Level 1-Workout: 5-10- Shuttle / 2-3 repetitions of agility drill

Level 1 -Workout: Cone L-Drill / 2-3 repetitions of agility drill

Level 2 -Workout: Cone Chute / 2-3 repetitions agility drill

Level 2 -Workout: W-Drill / 2-3 repetitions of agility drill

Level 2 -Workout: W-Drill with Backpedal / 2-3 repetitions of agility drill

Level 2 -Workout: 300-Yard Shuttle / 2-3 repetitions of agility drill

Cool Down 3-5 Minute Walk

## RECOVERY/STRETCHING (all 2x 20 sec)

Pigeon Pose

Cross Over IT Band Stretch

Groin Band Stretch

Hamstring Band Stretch

Childs Pose

Dog Down Calf Stretch

Quad Stretch

# UNIT PHYSICAL TRAINING RECOVERY

**PIGEON POSE**



**CROSS OVER IT BAND STRETCH**



**GROIN BAND STRETCH**



**HAMSTRING BAND STRETCH**



**CHILD'S POSE**



**DOWN DOG**



**CALF RAISE**



**STANDING DORSIFLEXION**



**QUAD STRETCH REACH OUT**



# WALK-TO-RUN PROGRAM

## Level I – Ideal for Airmen returning to running after being off for 8+ weeks

Start the program by building up to 30 minutes of non-stop walking, then progress to level II

Week	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
<b>1</b>	Walk 20 min	<b>Rest</b>	Walk 22 min	<b>Rest</b>	Walk 24 min	<b>Rest</b>	
<b>2</b>	Walk 26 min		Walk 28 min		Walk 30 min		

## WALK-TO-RUN PROGRESSION

### Level II – For Airmen returning to running after being off 4+ weeks

Gradually add short intervals of running between longer intervals of walking

<b>1</b> 30 min total	Walk 4 min Run 2 min Repeat 5x	<b>Rest</b>	Walk 4 min Run 2 min Repeat 5x	<b>Rest</b>	Walk 4 min Run 2 min Repeat 5x	<b>Rest</b>
<b>2</b> 30 min total	Walk 3 min Run 3 min Repeat 5x		Walk 3 min Run 3 min Repeat 5x		Walk 3 min Run 3 min Repeat 5x	
<b>3</b> 30 min total	Walk 2 min Run 4 min Repeat 5x		Walk 2 min Run 4 min Repeat 5x		Walk 2 min Run 4 min Repeat 5x	
<b>4</b> 30 min total	Walk 1 min Run 5 min Repeat 5x		Walk 1 min Run 5 min Repeat 5x		Walk 1 min Run 5 min Repeat 5x	
<b>5</b> 28 min total	Walk 1 min Run 6 min Repeat 4x		Walk 1 min Run 6 min Repeat 4x		Walk 1 min Run 6 min Repeat 4x	
<b>6</b> 27 min total	Walk 1 min Run 8 min Repeat 3x		Walk 1 min Run 8 min Repeat 3x		Walk 1 min Run 8 min Repeat 3x	
<b>7</b> 26 min total	Walk 1 min Run 12 min Repeat 2x		Walk 1 min Run 12 min Repeat 2x		Walk 1 min Run 12 min Repeat 2x	
<b>8</b> 20-25 min total	Run 20-25 min		Run 20-25 min		Run 20-25 min	

The goal of this program is to feel comfortable running for 20-30 minutes at an easy pace.

This program is very gradual in progression, and you may find that you can speed it up by starting at a later week or skipping some of the weeks, particularly as you get better at running. You also have the option of slowing it down by spending more than one week at each stage if you feel you need to.

It is important to train at your own pace to avoid overtraining and getting injured.

