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Tabata-Style Workouts for Air Force Fighter Fundamental Students—Part 2: Novice Fitness Participants

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Disclaimer: The views in this article represent Colin Klatt's perspectives and not those of the United States Air Force, United States Military, or LMR Technical Group.

Abstract

Fighter pilot trainees, as a part of Undergraduate Pilot Training (UPT), face significant time constraints that limit the feasibility of traditional, longer-duration physical training programs. For novice fitness-trained individuals, developing foundational movement patterns, general strength, and neuromuscular coordination is critical before progressing to more advanced physical training modalities. This article presents a structured, Tabata-style training program designed specifically for novice-fitness level fighter fundamental students, emphasizing time efficiency while targeting key physical qualities required for aviation performance. The program integrates explosive movements, lower-body strength exercises, rotational mobility, and isometric trunk stabilization to support overall physical readiness for aviation-specific demands. Detailed exercise instruction is also provided to help promote proper technique and safe execution for individuals with limited training experience. By focusing on foundational development within a condensed training format, this approach offers a practical solution for improving physical preparedness without interfering with the demanding schedule of pilot training.

Introduction

Fighter pilot trainees arrive to flight school in various levels of physical fitness. Regardless of starting-point physiological state when they enter the program, these individuals must develop functional fitness via foundational movement patterns, general strength, and neuromuscular coordination for cockpit performance. This article is the second in a four-part series that describes how this population can apply the training principles of the Tabata format to maintain and improve fitness. This specific article will describe an exercise program for the individual at the novice fitness level.

What Is Considered a "Novice" Level of Fitness?

A novice level of fitness can be defined as an individual who is either new to structured training or lacks consistent exposure to cardiovascular endurance training, resistance training, explosive movements, and trunk stabilization exercises. These individuals may possess general, baseline fitness but often demonstrate limitations in movement efficiency, coordination, strength, and the ability to control their body under load. From a practical standpoint, a novice trainee may struggle with maintaining proper

Round 1		Round 2		Round 3		Round 4		Round 5		Round 6		Round 7		Round 8	
Exercise	Rest	Exercise	Rest	Exercise	Rest	Exercise	Rest	Exercise	Rest	Exercise	Rest	Exercise	Rest	Exercise	Rest
20sec	10sec	20sec	10sec	20sec	10sec	20sec	10sec	20sec	10sec	20sec	10sec	20sec	10sec	20sec	10sec
MB Slams		Jump Squats		Goblet Squats		BW Glute Bridges		Seated T-Spine Rot. Right		Seated T-Spine Rot. Left		Lying Straight Leg Holds		Forarm Plank	
30sec Total		30sec Total		30sec Total		30sec Total		30sec Total		30sec Total		30sec Total		30sec Total	

Table 1: Basic Tabata-Style Workout for Individuals of a Novice Fitness Level. Legend—BW: bodyweight; MB: medicine ball; Rot: rotation; sec: second; T-Spine: thoracic spine.

posture during compound movements, producing force quickly, or sustaining core stability during basic exercises. There is a debate within the strength and conditioning community on what the core is, but the author simply defines core as one ability to control spinal flexion, extension, and rotation through a series of movements targeting the stimulation of abdominal muscles, as for the purposes of this article and the target population.

Additionally, their work capacity and recovery ability are typically lower, meaning that individuals fatigue more quickly under moderate to high-intensity efforts and/or take greater time to recover. For fighter pilot trainees, this response does not imply a lack of capability, but rather a need to build a strong physical foundation that supports more advanced training. Establishing movement competency, strength, and control at this level is essential for reducing injury risk and improving long-term performance progression. In all, if there is any doubt as to where to begin or if one is capable of handling a harder-tasked program, they should consider themselves a novice. It's better to start at easier level, then advance to a harder session.

Program 1: Novice

As this program is based on novice individuals with a lower base-level of fitness, the structure of the workout prioritizes foundational movement competency, general strength development, and basic neuromuscular coordination before introducing more advanced or highly specialized conditioning strategies. This approach aligns with established strength and conditioning principles that emphasize progressive exposure to explosive movement patterns and stabilization demands in populations who must develop both resilience and movement efficiency before performing higher-load or higher-complexity tasks.[1] Ideally, the participant will conduct as many rounds as they feel comfortable with or as time allows. It is, however, recommended that for the novice fitness level, the individual starts with three rounds and progresses to four to five rounds when possible. Time should be allotted for full recovery post each round (i.e., 2 to 5 minutes).

Exercise Selection: MB Slams and Jump Squats

One of the primary objectives of the workout is the introduction and reinforcement of basic explosive movement patterns. Exercises such as medicine ball (MB) slams and jump squats are included early in the sequence to promote rapid force production and rate of force development. Explosive movements train the neuromuscular system to generate force quickly, which is a foundational athletic quality and contributes to overall power output and coordination.[2] Although fighter pilots are not traditional field athletes, the rapid neuromuscular activation required for explosive training parallels the rapid physical responses needed during high-demand flight situations, such as performing anti-G [gravitational] straining maneuvers or stabilizing the body during abrupt aircraft movements. Notably, this explosive movement is not found in traditional long slow distance running.



Shown above is the step progression of the medicine ball slam.

How to Conduct the MB Slam

1. Load the movement (start position): Stand with feet about shoulder-width apart, holding the medicine ball overhead. Extend the arms fully while keeping the core tight and the hips slightly hinged. This movement creates full-body tension and prepares the body to generate force from the hips and trunk.

2. Explosively drive the ball downward: Forcefully slam the ball into the ground by rapidly flexing at the hips, engaging the core, and driving the arms downward. The power of the movement should come from the upper body, hips, and trunk, not just the arms. The goal is producing maximal force as quickly as possible.

3. Absorb and reset: Allow the ball to bounce, catch it while maintaining an athletic stance, and immediately return to the overhead position to repeat the movement. Maintain core stability and proper posture throughout each repetition.

How to Conduct the Jump Squat

1. Set the starting position: Stand with your feet about shoulder-width apart and your chest upright. Brace your core and position your arms slightly behind your body to prepare for the explosive movement. Maintain an athletic stance with your weight being balanced through the mid-foot.

2. Explosively jump upward: Lower into a quarter squat by bending at the hips and knees, then immediately drive through the ground and jump vertically. Extend the hips, knees, and ankles forcefully while swinging the arms upward to help generate maximum power.

3. Land softly and reset: Land softly on the balls of your feet before allowing the heels to touch the ground, absorbing the impact by bending again at the knees and hips. Maintain proper posture and balance as you return to the starting position before beginning the next repetition.

Exercise Selection: Goblet Squats and Bodyweight (BW) Glute Bridges

In addition to explosive movements, the protocol incorporates general lower-limb strength development through exercises such as goblet squats and BW glute bridges. Lower body strength is critical for pilots because the musculature of the hips and lower extremities plays a major role in supporting anti-G straining maneuvers and maintaining circulation under high gravitational loads.[3] Strengthening the posterior chain and lower-limb musculature also contributes to improved trunk stability and force transmission throughout the body, which can help reduce



Shown above is the step progression of the jump squat.

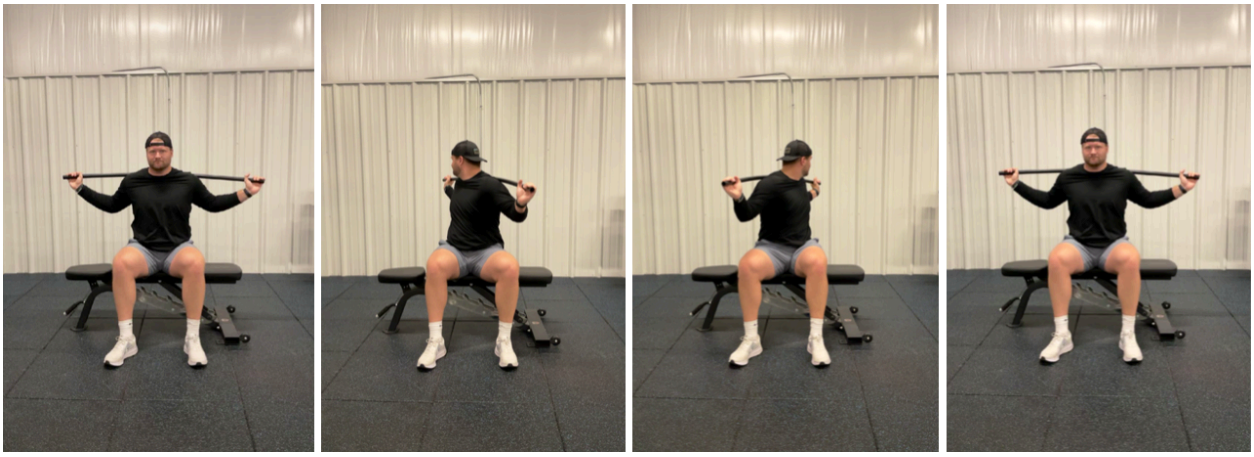
fatigue and maintain postural integrity during prolonged flight operations.[4] Lastly, due to the seated nature of being a fighter pilot, as well as the frequently sedentary nature of much of our society, having tight anterior hip flexors can be problematic; therefore, focusing on the posterior chain (glute bridges) will ideally limit the amount of anterior pelvic tilt and its resulting lower back pain.

How to Conduct the Goblet Squat

1. Set the starting position: Stand with your feet about shoulder-width apart while holding a dumbbell or kettlebell vertically against your chest with both hands. Keep the chest tall (i.e., by keeping the shoulder blades pulled back), the core braced, and the elbows pointed slightly downward. This position helps reinforce an upright torso and proper squat mechanics.



Shown above is the step progression of the goblet squat.



Shown above is the step progression of the seated thoracic-spine rotation.

2. Descend into the squat: Lower your body by pushing the hips back and bending the knees at the same time. Keep your chest up and your weight balanced through the mid-foot and heels. Continue lowering until your thighs are at least parallel to the ground while maintaining control and proper posture.

3. Drive back to standing: Push through the heels and extend the hips and knees simultaneously to return to the starting position. Keep the core engaged and maintain a tall chest throughout the ascent before resetting for the next repetition.

How to Conduct the BW Glute Bridge

1. Set the starting position: Lie on your back with your knees bent and feet flat on the floor about hip-width apart. Position your heels close enough to your body that your fingertips can lightly touch them when your arms are at your sides. Keep your arms resting on the floor, and brace your core to stabilize the trunk.

2. Drive the hips upward: Press through your heels and contract the glutes to lift your hips off the ground. Continue raising the hips until your shoulders, hips, and knees form a straight line. Focus on squeezing the glutes at the top while keeping the ribs down and avoiding excessive arching of the lower back.

3. Lower with control and reset: Slowly lower the hips back down toward the floor while maintaining core engagement. Once the hips lightly touch the ground, reset your position and repeat the movement.

Exercise Selection: Seated Thoracic Spine (T-Spine) Rotations

Another key component of the workout design is the inclusion of rotational and anti-rotational trunk exercises, such as seated T-spine rotations. Rotational mobility and control are particularly important for aviators, as cockpit environments require repeated torso rotation and asymmetric postures while interacting with controls and scanning instruments (i.e., crosscheck). Training rotational movement patterns helps develop thoracic spine mobility and trunk coordination, which may reduce compensatory movement patterns and improve overall movement efficiency.[5] Furthermore, developing controlled rotational strength may help mitigate the musculoskeletal strain associated with prolonged seated positions and head-turning during flight.

How to Conduct Seated. T-Spine Rotations

1. Set the starting position: Sit upright on the floor or on a



Shown above is the step progression of the bodyweight glute bridge.

bench, with the knees bent and feet flat on the ground. Place your hands lightly across your chest or behind your head (a PVC pipe or wooden dowel can also be used, as depicted). Maintain a neutral spine (i.e., your spine tall) and the core engaged to prevent movement from the lower back.

2. Rotate through the thoracic spine: Slowly rotate your upper body to one side while keeping your hips and lower body stable. Focus on initiating the movement from the mid-back (thoracic spine) rather than the lumbar spine. Rotate as far as is comfortable while maintaining an upright posture. Turn your head, with the thoracic spine rotation, until your eyes reach a 180-degree view (i.e., "check six").

3. Return and repeat: Return to the center position under control, then rotate to the opposite side. Continue alternating sides while maintaining a stable lower body and controlled movement. The movement is the same in both directions.

Exercise Selection: Lying Straight Leg Holds and Forearm Planks

The protocol also integrates isometric stabilization exercises, such as lying straight leg holds and forearm planks, to improve trunk endurance and postural control. Isometric trunk exercises are widely used to develop spinal stability and endurance of the core strength, which play a crucial role in maintaining body position and resisting excessive movement under load.[6,7] For fighter pilots, the ability to maintain trunk rigidity and stability is particularly important during high-G exposure, where maintaining body alignment and muscular tension can contribute to effective anti-G straining and reduce the likelihood of fatigue-related postural loss.

How to Conduct Lying Straight Leg Holds

1. Set the starting position: Lie on your back with your legs extended and your arms resting at your sides or slightly under your hips for support. Brace your core and keep your lower back pressed gently into the floor to maintain a neutral spine position.

2. Raise and hold the legs: Lift both legs off the ground while keeping them straight. Raise them to a position where your core must actively engage to maintain stability, typically a few inches off the floor or slightly higher, depending on current

fitness level and ability (e.g., the lower you hold your feet, the more strain it is on the core). Maintain tight abdominal engagement and controlled breathing.

3. Maintain position and control: Hold the position while keeping the legs straight and the core braced. Avoid letting the lower back to arch or the legs to drift downward. After the designated hold time, slowly lower the legs back to the ground and reset.

How to Conduct Forearm Plank

1. Set the starting position: Lie face down and place your forearms on the floor with your elbows positioned directly under your shoulders. Extend your legs behind you, with your toes on the ground. Engage your core and lift your body so that it forms a straight line from your head to your heels.



Shown above is the lying straight leg hold.





Shown above is the forearm plank.

2. Brace and stabilize: Tighten the abdominal muscles and glutes while maintaining a neutral spine. Avoid letting the hips either sag toward the floor or raise too high. Keep your shoulders stable over your elbows and maintain steady breathing while holding the position.

3. Hold and maintain alignment: Continue holding the plank while keeping the body rigid and aligned. Focus on maintaining tension through the core and posterior chain. Once the set time is completed, lower your body back to the ground and reset.

Conclusion

Despite time constraints, fighter pilot trainees at the novice level must begin developing a foundation of movement competency, strength, and coordination to support future cockpit performance. The Tabata-style approach offers a practical way to introduce these foundational qualities while maintaining efficiency within a demanding training schedule. This article focused on establishing baseline physical readiness through simple, controlled, and effective movements that are appropriate for individuals less experienced in physical training. The following article (Part 3) will progress these concepts into an intermediate program designed for trainees who have developed a solid fitness base and are ready for increased intensity and complexity.

Author Biography



Colin T. Klatt is a human performance specialist, strength and conditioning practitioner, and entrepreneur, with professional experience spanning applied sport science, cognitive performance, tactical human performance, and long-term athlete development. He holds several industry-recognized certifications, including Certified Strength and Conditioning Specialist (CSCS), Tactical Strength and Conditioning Facilitator (TSAC-F), and USA Weightlifting Level 1 Coach (USAW L1). His work integrates evidence-based training methods with real-world performance demands across both military and athletic populations. He currently serves as an on-site Human Performance Specialist and Site Lead with LMR Technical Group in support of the United States Air Force Comprehensive Readiness for Aircrew Flying Training (CRAFT) initiative at the 14th Flying Training Wing, Columbus Air Force Base, Mississippi. Klatt is also the founder of Klatt Performance LLC, where he coaches athletes from the middle school level through the professional sport level. His training philosophy emphasizes long-term athletic development, injury mitigation, movement quality, and performance outcomes that transfer directly to competition. He is currently pursuing a PhD in Exercise Science with an expected completion date of 2029. He earned a Master of Arts in Kinesiology and Sport Performance from the University of Northern Iowa in 2024 and a Bachelor of Science in Exercise Science with a minor in Coaching from Winona State University in 2022.

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