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High Intensity Interval Training for Tactical Athletes

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DISCLAIMER

The views expressed in this presentation are those of the author, and do not necessarily reflect the views of the Air Force, the Department of Defense, or the U.S. Government
In Order to Accomplish Their Mission, Tactical Athletes Must Possess:

• Aerobic fitness
• Muscular endurance
• Strength/Power
• Speed
• Flexibility
• Agility and coordination
Major Challenges to Training:

- Extended 12/24 hour duty shifts
- Working night/swing shifts
- Family life/children
- Inability to train when facilities are available
- Extreme climates
- Lack of time
To Overcome Training Challenges, the Protocol Must be:

• Time-efficient (30 minutes or less)
• Scientifically valid
• Able to be accomplished indoors or outdoors
• Safe to perform (low injury risk)
• Effective (improvements in fitness/test scores)
• Fun (high adherence to training)
The Solution: High Intensity Interval Training (HIIT)
HIIT Defined

• Consists of alternating intervals of hard exercise (90%-95% maximum) with intervals of active rest.
• The hard intervals typically last 10-90 seconds, but may be longer, depending on training.
• The active rest intervals are frequently, but not always equal or greater than the hard intervals in duration.
A HIIT Example:

30 seconds of hard exercise

Followed by 60 seconds of active rest, repeated 6-12 times
What HIIT is Not:

- The lack of a resistance or functional training component distinguishes HIIT from other high intensity training programs, such as CrossFit/P90X
Health Benefits of HIIT

• Improvements in HDL cholesterol/triglycerides
• Increases in mitochondrial protein content and oxidative enzymes
• Improved blood glucose regulation
• Reduced blood pressure/improved heart wall function
• Improved VO2max/lipid oxidation
• Improved anaerobic power/insulin sensitivity
HIIT Training: Performance Improvements

- **Rowers:** improvements in 2,000 m time/power and VO2peak
- **Wrestlers:** increased VO2max, time to exhaustion and mean power output
- **Australian Rules Football:** improved 300 m shuttle run, peak running speeds
- **Lacrosse:** improved VO2max, anaerobic power, mean power output, fatigability
Other Sports Where HIIT Makes a Difference

- Tennis
- Judo
- Soccer
- Swimming
- Cycling
- Long distance running
HITT and Tactical Athletes

- Improvements in % body fat and fitness test performance in firefighters
- Improved military task performance in soldiers
- Higher Army Physical Fitness Test (APFT) scores with lower rates of injury
How We Get HIIT at Davis-Monthan AFB
Recommended Equipment: The Keiser M3+ Indoor Cycle

Precise workload adjustments in watts, backlit display screen

Magnetic resistance, practically indestructible, low repair costs
HIIT Classes at Davis-Monthan

- Classes are currently offered at 0600, 1100 and 1300 hrs on Tuesday/Thursday
- Each class is 30 minutes in length
- Typical attendance: 20-40, with occasional overflow
HITT Classes at Davis-Monthan

• Class newcomers are shown how to adjust their bikes by the instructor prior to the class.
The Davis-Monthan HIIT Protocol:

- 60 second warmup, where the class is explained to new attendees
- 60 seconds of hard cycling. Attendees are encouraged to push as hard as they can for those 60 seconds
The Davis-Monthan HIIT Protocol

• Each 60 second hard interval is followed by 90 seconds of active rest. The active rest workload is self-selected
• Airmen are encouraged to use heart rate monitors to track their intensity
The Davis-Monthan HIIT Protocol

• Beginners are not expected to complete all 10 intervals the first class. They can skip some intervals if needed

• Though open to all, 90%-95% of attendees are Airmen
The Davis-Monthan HIIT Protocol

- After the 10 intervals, there is a 90 second cool-down, followed by 1-2 minutes of static stretching.
The Davis-Monthan HIIT Protocol

• Airmen taking the class on a regular basis (2 x per week) anecdotaly report improvements in their 1.5 mile run times of 1, 2 and occasionally 3 minutes.

• The larger improvements are seen only in less fit Airmen.
The Davis-Monthan HIIT Protocol

- Music is also played during the class to help the attendees keep a constant RPM on the cycles.
- The type of music is not typical of group exercise; hard rock, metal and rap are the preferred formats.
The Davis-Monthan HIIT Protocol

• But, of course, attendees are free to listen to any music they choose 😊
The Davis-Monthan HIIT Protocol

• Besides the fitness test improvements, one reason Airmen like the HIIT class is that it’s fun!
• Recent research indicates HIIT training may have higher adherence rates than more traditional cardiovascular training
HIIT can be performed anywhere!

• One additional benefit of HIIT is the results are mode independent
• For example, HIIT could be performed on an outdoor track, using a 1-2 work/rest interval, or by sprinting the straights/walking the curves
Any Mode Goes with HIIT

Indoor Track

Treadmill
Any Mode Goes With HIIT

Bike

Elliptical
Even Kids can Get Fit with HITT!
HIIT Conclusions

• HIIT develops the same physiological adaptations as traditional cardio, with far less time commitment.
• HIIT has been documented to improve both health and sports performance.
• More limited data suggests HIIT may improve tactical/operational performance.
• HIIT can be performed anywhere!
Thank You!

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References


References


