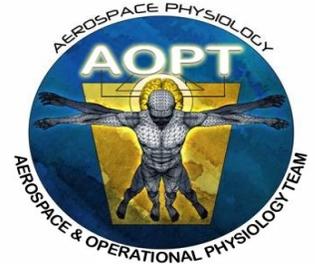


The Phiz Biz

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Courtesy of Aerospace and Operational Physiology
by TSgt Ryan Page

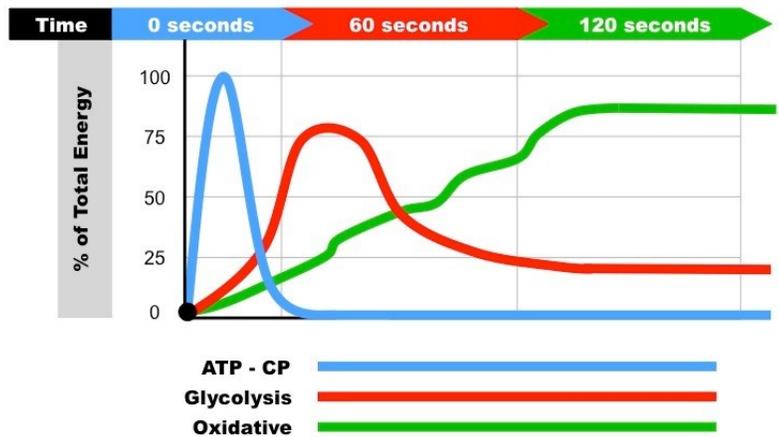
The Pep in Our Step...

Typical fitness assessment, can you relate?

You show up to your scheduled fitness assessment, get your waist measured, push-ups and sit-ups evaluated, and then finish things off with a variation of the aerobic component. Yet, warming up for the assessment was never considered, especially for the aerobic component of the test to get your metabolic system functioning efficiently. Our bodies need to be warmed up to get the best out of our performance!

How does our metabolic system work?

The metabolic system is a combination of three energy systems: phosphagen (PCr), glycolytic (anaerobic), and oxidative (aerobic). When exercise is initiated, in this case the aerobic portion of the test, all three energy systems will be utilized to provide the body with sufficient energy for optimal performance.¹ The PCr system will provide more than enough energy, near 100%, but will only last approximately 6-10 seconds before the energy stores have been completely depleted.² Once depleted the anaerobic system becomes the primary energy system until the glycogen stores within the muscles are not able to keep up with the duration of exercise. The anaerobic system lasts about 120 seconds and will continue to provide approximately 15% of energy as the oxidative system takes over.³ Finally, the oxidative system is fully activated around 90 seconds and will continue to provide roughly 80% of the energy needed for the duration of the run, and longer if needed. Activation of these energy systems could help to explain the feeling of exhaustion when nearing the first lap, the anaerobic system is slowing down, and the aerobic system hasn't fully begun to produce the energy required to run.



<http://taekwondoanditsenergysystems.weelby.com>

Take away...

It will take approximately 90 seconds to “wake up” the aerobic system to provide the needed energy to complete the aerobic component.⁴ A proper warm-up to get the heart pumping, blood flowing, and muscles firing through a series of dynamic movements will be more than sufficient to wake up the aerobic energy system. A dynamic warm-up similar to the example below would properly prepare the body for the aerobic component due to the 90 seconds already being accomplished, the body would be utilizing the oxidative system for energy, and help to prevent the onset of fatigue.

Example warm-up: 20 yards each

- Walking lunge with upper body twist over the front knee
- Quad stretch, alternating every couple steps
- Knee hug, alternating every couple steps
- Walking leg swing with opposite hand touching toe
- Side shuffle with arm swing, down and back
- High knees
- Butt kicks
- Carioca, down and back

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1. <https://runnersconnect.net/energy-systems-running/>

2,4. <https://www.experiencelife.com/article/all-about-your-metabolic-energy-systems/>

3. <https://www.nasca.com/education/articles/anaerobic-conditioning-training-the-three-energy-systems/>