DOES EXPERIENCE EQUAL EFFICIENCY?

COMPARING EXPERIENCED/INEXPERIENCED FIREFIGHTERS O_2 USE, TIMES, AND HEART RATE IN A SIMULATION FIRE FIGHTING COURSE.

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Introduction
Monitoring fitness for firefighters helps protect them from strain and identify areas for improvement during shift work. After two preliminary tests were conducted on firefighter, testing in full firefighter gear was needed to determine how physical demands impact oxygen consumption. Older firefighters suggested that a skill important to effective response was becoming efficient in using the oxygen supplied by the tanks they wear.

Purpose
- Assess how performance and oxygen use in a simulated obstacle course
- Related experience
- From baseline cardiovascular and maximal heart rate recordings for fire fighter athletes

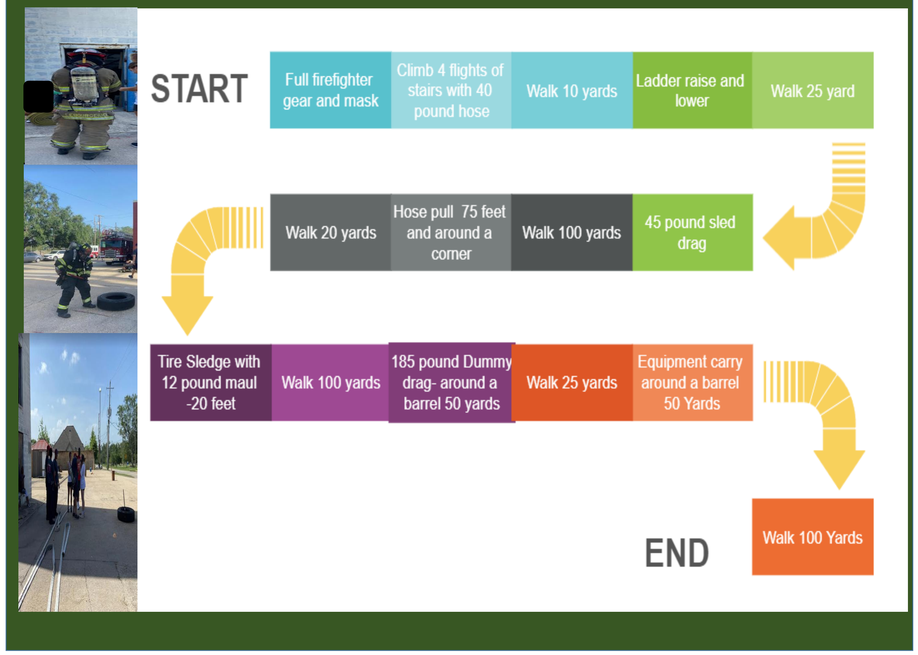
Methods
- 41 fire fighting participated
- Equipped in full firefighting gear
- Completed a simulated fire fighter obstacle course.

Measurements
- Resting heart rate,
- Blood pressure, maximal heart rate, course time,
- Oxygen use (oxygen tank readings pre and post course).

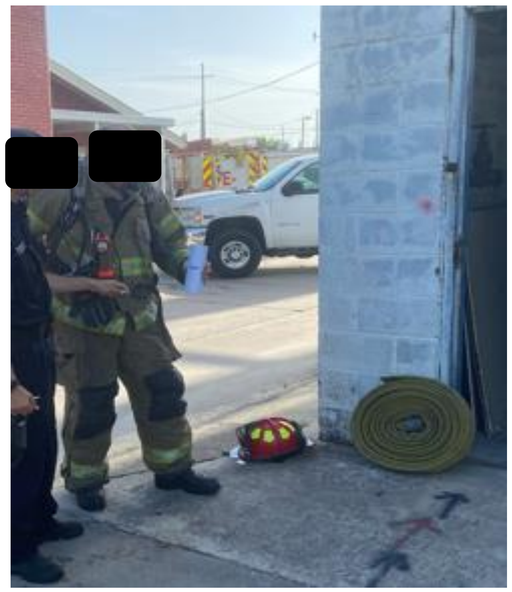
Results
- Comparing experience and oxygen use, a significant negative correlation was evident ($r = -0.33$, $p<0.01$).
- To a lesser degree, this trends was observed with completion time ($r = -0.25$, $p <0.05$).
- Maximal heart rate was positive correlated to oxygen use ($r = 0.34$, $p < 0.01$).
- Higher resting heart rate was positively associated with worse course completion times.

Major Findings

- Oxygen use was more efficient in experienced firefighters
- Maximal heart rate was related to oxygen use
- Higher resting heart rate was related to longer completion times.



Conclusions
- Experienced firefighter were more efficient with their oxygen use.
- Obstacle course times also favored the more experienced fire athletes.
- Experience helps firefighters learn to regulate oxygen use in the face of strain.



Practical Applications
- Self regulated breathing while in full gear remains a skill that favors the more experienced athletes.
- Training and mentorship is needed to learn efficiency with oxygen use.
- Further research is needed to assist skill development of efficient oxygen use during stressful emergency response.