Effect of Aspirin on Hemostatic and Vascular Function after Live Fire Fighting

What you need to know….

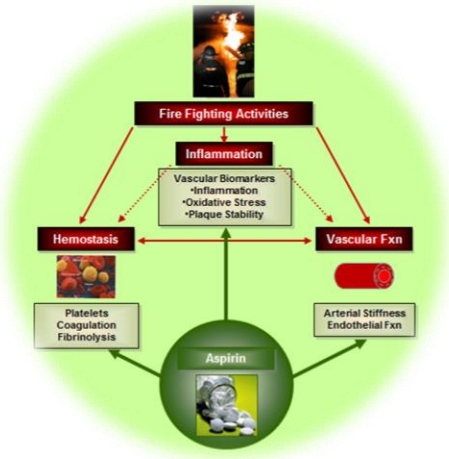
Sudden cardiac events account for approximately 45% of line of duty deaths each year. Nearly 90 percent of these fatalities occur in firefighters over the age of 40 years. Additionally, 600-1000 firefighters suffer non-fatal cardiac events in the line of duty each year. Strenuous activity can serve as a trigger for sudden cardiac events and firefighting activity increases the relative risk of sudden cardiac events to 10-100 times that of non-emergency station duty.

Cardiovascular Responses to Fire Fighting

It is well known that firefighting leads to a rapid increase in heart rate and that near-maximal heart rates are achieved during firefighting activities. However, the magnitude of cardiovascular strain and the degree of impairment is dramatically underappreciated by most individuals in the fire service. Firefighting has been shown to cause

- Reduction in plasma volume, which increases blood viscosity, thereby increasing the risk for negative cardiovascular outcomes
- Increase in platelet number and function
- Increase in clotting potential
- Reduction in arterial function
- Increase in oxidative stress and inflammation.

Low dose aspirin has been shown to positively influence all of the above variables.



IFSI Research Study

We employed a double-blind study that included four treatments: a two week aspirin/placebo treatment and a single pre-firefighting aspirin/placebo treatment. A complete profile of vascular health, hemostatic variables and inflammatory markers were collected immediately before and after fire fighting to determine the effect of aspirin therapy on the detrimental vascular and hemostatic changes that are known to occur with firefighting.

Critical Study Outcomes

Results of this study provide important new information regarding recommendation of aspirin therapy in the Fire Service.

- Significant reduction in platelet activation with acute and long term usage of aspirin, with 2 week supplementation have a significantly larger impact on platelet function.
- No significant impact on functional clotting time post-firefighting regardless of aspirin usage.
- Chronic aspirin was effective in reducing overall levels of inflammation markers in the blood
- Aspirin supplementation, both acute and chronic, did not change vasodilatory capacity after firefighting.

What does this mean for you?

- **Firefighting is associated with a procoagulatory state and impaired vascular function.**
- **Aspirin usage was associated with positive outcomes including decreased platelet activity.**
- **If you have been advised by a health care provider to take daily aspirin, it is important that you do so.**
- **If you have not been advised to take a daily, low dose aspirin, ask your health care provider if this is a good choice for you.**