



## EDITORIAL

## The Iron Brake Dust Age and the Female Advantage

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The iron brake dust age began with the automobile in the 1890's. Until recently, although air pollution was considered a risk factor for hypertension, the studies lacked statistical significance and were considered controversial [1]. However, a Japanese study, also published in the same year, 2016, showed that the key tracers of brake wear particles for example, iron and copper, were at emission levels comparable to traffic-related atmospheric environments [2].

I have pointed out with recent editorials [3,4] that the particulate matter, released from iron brakes is literally killing us because it is conducive primarily to hypertension. Furthermore, just as lunar investigators discovered that the quantity of iron particulate matter could be determined with magnets [3,4], recent studies have shown with magnets, that there may be little or no protection from outside iron particulate matter reaching indoors [5]; this suggests for example, that exercise on a treadmill, provides little or no protection versus running outdoor. Equally disturbing, is that with exposure to traffic, we are at risk from myocardial infarctions [6]. Furthermore, our risk from iron, may begin in childhood, based on the study in the Netherlands of 12-year-old's which showed that -- with exposure to iron-- there were significant elevations of diastolic blood pressures, portending hypertension in adulthood; similarly, Neil Armstrong returned from his historic mission, with extraordinary elevation of his diastolic blood pressure [3].

I have emphasized the advantages females have in Space, exemplified by the case for an all - female crew to Mars [7]. The incidence of endothelial injuries and the mortality rate is over six times higher in males than females under age 35.

In addition to estrogen, with marginal intakes of

magnesium (Mg), the levels are significantly higher in females; this is particularly advantageous since Mg deficiencies are so common, worldwide, existing in at least 60% of those in the United States. I believe correcting magnesium deficiencies may prolong life [8]. Both estrogen and Mg are antioxidants and calcium blockers, enhancing endothelial function, repair and angiogenesis. Long before atherosclerosis develops, an inflammatory process adversely affects the endothelium. This process is more likely to occur in men than in women by the third and fourth decades of life. Coronary artery disease may begin in males by age 11. The menstruation advantage with monthly loss of 30-50 cc of blood along with iron and in turn, protection from oxidative stress, provides a considerable advantage regarding tolerance to the release of iron particulate matter from brakes. How long will the "Iron Brake Dust Age" last? Until effective legislation occurs-- perhaps decades from now. A front-page story in a prominent, widely circulated newspaper, should do wonders. It seems to me rather strange that this risk hasn't been published until recently, since we have known about the hazards of iron-induced oxidative stress for decades; particularly, the hazards of inhalation of iron particulate matter since Man visited the moon almost fifty years ago. How much longer must we wait?

### References

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