Finding the zone

1. When an athlete has a high resting heart rate, how do I determine zone 1, for training purposes?

Question submitted by Dr. Jennifer Thomas, Clearwater, British Columbia

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The purpose of zone 1 training is to keep at 50% to 60% of one's maximum heart rate (MHR) and build a base for subsequent training. The Karvonen formula still holds:

- 220 - age = MHR
- MHR - resting heart rate (RHR) = heart rate (HR) modification capability
- HR modification capability x 60% = maximum rate of increase
- add this to the RHR and you have your zone 1 training limit

For example, a 40-year-old male has a MHR of 180 bpm and an RHR of 100 bpm. To determine his zone 1 training maximum HR:

- 180 - 100 = 80
- 80 x 60% = 48
- 100 + 48 = 148

Thus, his zone 1 training maximum HR is 148 bpm.

I would probably keep such a patient's HR below 130 bpm and gradually work up to his zone 1 target. He probably is quite deconditioned, but, the healthier he becomes, the lower his RHR will be and the harder he will have to work to attain his zone 1 HR.

Answered by:

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Diabetes, post-surgery

2. Eighty per cent of my patients have developed diabetes after bypass surgery. Can you explain why?

Question submitted by Dr. A.V. Dugas, Bathurst, New Brunswick

Bypass surgery is a major stress factor. Stress leads to an increase of catecholamine and cortisol levels and this, in turn, can lead to exacerbation of a previously subclinical form of diabetes mellitus (DM). About 25% of patients with myocardial infarction have previously unrecognized DM and a further 30% have impaired glucose tolerance.

Reference
1. Norhammar A, Tenerz A, Nilsson G, et al: Glucose metabolism in patients with acute myocardial infarction and no previous diagnosis of diabetes mellitus: A prospective study. Lancet 2000; 359(9324): 2140-4.

Answered by:

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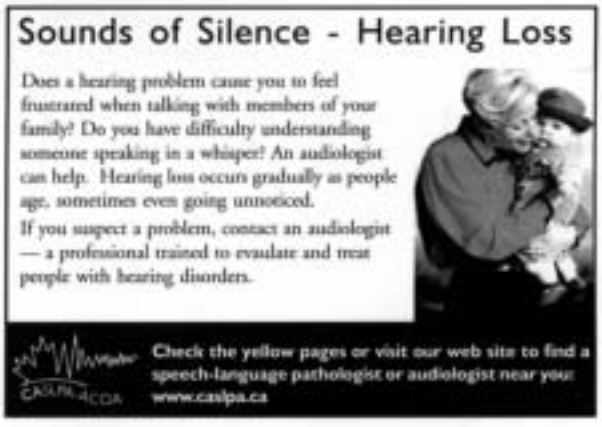
Stress can exacerbate previously subclinical DM.



ASA at what age?

3. At what age does the benefit of ASA outweigh the risk for primary prevention in women?

Question submitted by Dr. Mona Lee, Vancouver, British Columbia

The Women's Health Study[1] randomized nearly 40,000 healthy women, aged 45 and older, to a strategy of acetylsalicylic acid (ASA), 100 mg, on alternating days, versus placebo. While this trial showed a significant 17% decrease in the risk of stroke among women in the treatment group (p=0.04), a subgroup analysis showed significantly reduced rates of MI only among women aged 65 and older.

When considering this data, the risk of side-effects needs to be considered; overall, the treatment group had significantly increased rates of gastrointestinal bleeding requiring transfusion (p=0.02). The benefit of ASA among women under the age of 65 was outweighed by this risk, largely because of the low absolute numbers of major cardiovascular events.

In the subgroup of women aged 65 or older, however, the authors note that though ASA caused 14 more gastrointestinal bleeds requiring transfusion, ASA therapy was also associated with 44 fewer major cardiovascular events (p=0.008), including 21 fewer MIs.

Thus, the balance of risk/benefit would suggest that ASA should be used for primary prevention in women aged 65 and older.

Reference
1. Ridker PM, Cook NR, Lee IM, et al: A randomized trial of low-dose aspirin in the primary prevention of cardiovascular disease in women. N Engl J Med 2005; 352(13):1293-304.

Answered by:

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Insomnia and CV problems

4. What is the influence of insomnia on cardiovascular problems?

Question submitted by Dr. Jean Drouin, Cap-Rouge, Québec

Simple insomnia will result in increased early morning surges in blood pressure, predisposing patients to acute cardiac events, which are more frequent between 6:00 a.m. and mid-morning. Simple insomnia can be treated with nighttime sedation, but if obstructive sleep apnea due to upper airway obstruction were present, this would worsen the condition and is, thus, contraindicated.

About 10% of patients with cardiac failure have sleep apnea, which predisposes them to nocturnal hypoxemia and, therefore, cardiac ischemic events. It also increases the incidence of atrial fibrillation. The treatment of sleep apnea is ventilatory assistance devices (*i.e.,* a mask) and supplemental oxygen, thereby improving paroxysmal nocturnal dyspnea and hypoxemia.

Answered by:

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