Heartbeat: Highlights from this issue

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Exercise and the heart is the focus of two original research articles in this issue of *Heart*. The first paper, by Dr Mons and colleagues (***see page 1043***) examined the dose-response curve between self-reported physical activity levels and prognosis in a prospective cohort of 1039 subjects with stable coronary disease. Graphs of the level of physical activity versus clinical outcomes of major cardiovascular events, nonfatal cardiovascular events, cardiovascular and all cause mortality, all showed that the highest risk was seen for inactive patients, however risk also was higher in those with high levels of physical activity compared to those who exercise only 2 to 4 hours per week (see figure 1).

The effects of physical activity on cardiac disease are also addressed in a study by Professor Drca and colleagues (***see page 1037***). In a cohort of over 44,000 men (mean age 60 years) without known atrial fibrillation, information about levels of physical activity earlier in life was assessed by questionnaire. Atrial fibrillation (AF) was diagnosed in 10% of this cohort over a median follow up of 12 years. The risk of AF was lower in men who were engaged in moderate intensity exercise for more than one hour per day later in life. However the risk of AF was higher in those who engaged in high intensity exercise for more than 5 hours per week earlier in life (at age 30 years) and was even higher if they quit exercising later in life.

An editorial by Drs Guasch and Mont (***see page 999***) puts both these papers into perspective; exploring the paradox that regular exercise both has well-known benefits but may also increase cardiovascular risk. The key is that the dose–response relationship between exercise and cardiovascular health is a reversed J or U-shaped curve—a moderate duration of moderate intensity exercise offers the maximal cardiovascular benefit. What remains unclear is how much exercise is "too little" and how much is "too much". As Drs. Guasch and Mont caution: "The beneficial effects of exercise are definitely not to be questioned; on the contrary, they should be reinforced. The studies reviewed here and future studies will serve to maximise benefits obtained by regular exercise while preventing undesirable effects—just like all other drugs and therapies".

Clinicians will also want to read the article by Dr Griffiths and colleagues (***see page 1031***) on the cost-effectiveness of ivabradine for treatment of heart failure. A Markov model of total costs and quality adjusted life years, estimated over a lifetime for standard heart failure care without or with the addition of ivabradine, indicated a 95% chance of this therapy being cost-effective in the EU population, based on the current National Institute for Health and Care Excellent cost effectiveness threshold. This finding was robust on complex sensitivity analysis in which a range of possible values for the model parameters are considered to ensure that the conclusions would not be altered by any single variable.

In the accompanying editorial, Drs. Morris and Hunter (***see page 991***) make several interesting comments, including

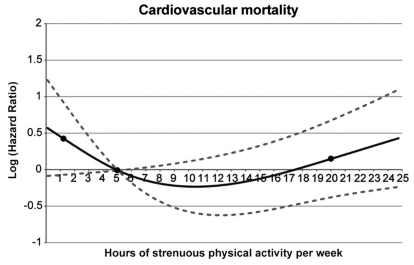

Figure 1 Relationship between overall duration of strenuous activity in hours per week and cardiovascular mortality. Solid black line: point estimates; grey dashed lines: 95% CIs. The black circles in the point estimates curve represent the knots, which were set at the 5th, 50th and 95th percentiles according to the distributions of the continuous exposure variable. The median was set as the reference value. The models were adjusted for season, sex, age, education, employment status, study site, cotinine-validated smoking status, BMI, self-reported poor health, history of myocardial infarction, diabetes mellitus, hypertension and number of affected vessels.

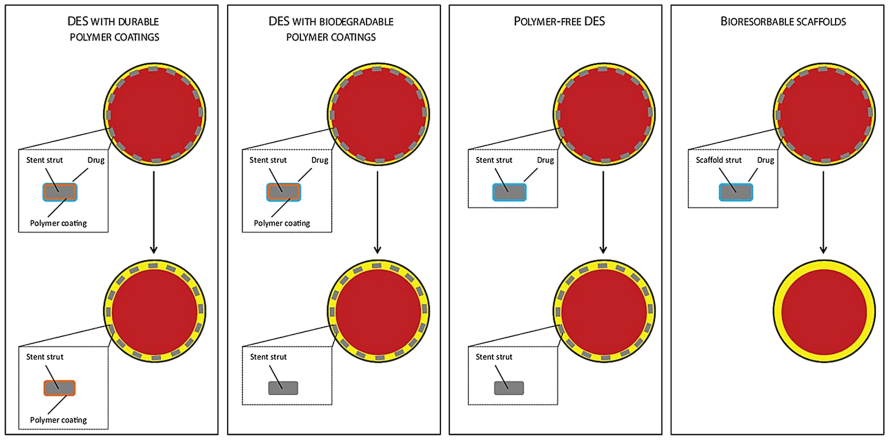

Figure 2 Schematic representation of coronary stent technologies. From left to right: drug eluting stents (DES) with durable polymer coatings, DES with biodegradable polymer coatings, polymer-free DES, and fully bioresorbable coronary scaffolds. The top panels summarise the features of the coronary cross sections and stent cross sections at the time of implantation, whereas the bottom panels show the same features after the completion of drug release. In the coronary cross sections, the vessel lumen is displayed in red, the intima in yellow, and the stent struts in grey.

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the important point that many heart failure patients do not receive adequate beta-blocker therapy and that ivabradine therapy should be used in addition to, not at an alternative to, adequate beta blocker therapy and other standard heart failure therapies.

This issue's Eduction in Heart article by Drs. Stefanini and colleagues (***see page 1051***) reviews recent developments in coronary stents. Newer generation drug eluting stents are characterized by thinner struts, novel durable or biodegradable polymer coatings, and new antiproliferative agents; all of which have improved safety and outcomes compared to earlier generation devices. Other novel approaches including fully biodegradable coronary scaffolds are currently in clinical investigation (see figure 2).

The Image challenge (***see page 1050***) in this issue will test your diagnostic skills in interpreting Doppler echocardiographic data.

To cite Otto CM. *Heart* 2014;**100**:989–990.
Heart 2014;**100**:989–990.
doi:10.1136/heartjnl-2014-306213