Access and Diversity in Academic Mentoring

To the Editor: In their Commentary, Drs Detsky and Baerlocher considered how to give and receive academic mentoring. We would like to add 2 points to their discussion.

First, mentoring is nice help if you can get it. Although academic medicine depends on mentoring to prepare its next generation of teachers and researchers, many faculty, trainees, and students do not have mentors. A systematic review of mentoring programs estimated that as little as 20% of faculty in some specialties and less than 50% of medical students have a mentor. Women faculty at our institution participating in focus groups described a climate in which tight finances and increasingly complex regulatory requirements leave little time for nonreimbursable activities like mentoring. Therefore, in addition to fostering more productive mentoring relationships, medical schools should ensure that all faculty, trainees, and students who want mentorship actually receive it.

Second, there is differential access to good mentoring. Women in this population report greater difficulty finding mentors and more negative experiences with mentorship, compared with men. Women and men who are from underrepresented racial and ethnic groups are also less likely to have mentors, and the relatively small number of senior faculty from these groups may be both a barrier to effective mentoring and a factor in the continued difficulty of retaining racially and ethnically diverse physicians in academic medicine. Furthermore, both overt discrimination and subtle expressions of bias continue to create inhospitable environments for faculty and students who are lesbian, gay, and bisexual.

Medical schools that are committed to developing a diverse faculty and serving the needs of a diverse student body can design programs that counteract assumptions about traditionally marginalized groups, deal effectively with harassment and discrimination, and avoid missed mentorship opportunities. For example, women and minorities may flourish in nontraditional mentoring experiences, such as multi-level mentoring and peer group mentoring.

Thus, we would add the following to the list of advice offered by Detsky and Baerlocher: (1) be an advocate for and participant in mentoring programs, so that mentorship is available to all who want it; (2) do not assume that it is easy for junior faculty, trainees, and students to find good mentors—formal programs may be needed to make the important connections that lead to effective mentoring relationships; and (3) recognize that some members of the academic community face unique barriers to mentorship, and that organized efforts by large-spirited mentors and forward-thinking institutions will be needed to pull down those barriers.

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Financial Disclosures: None reported.

In Reply: We thank Dr Brown and colleagues for their comments in response to our Commentary. We agree completely.

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RESEARCH LETTER

Cardiovascular Response to a Modern Roller Coaster Ride

To the Editor: Cardiovascular responses to older roller coaster rides have been studied, but technological advances have created rides that generate greater physical forces. We investigated cardiovascular responses to a modern roller coaster ride.

Methods. Healthy volunteers aged 18 years or older were recruited from consecutive amusement park visitors intending to ride a roller coaster (Expedition GeForce, Holiday Park, Hassloch, Germany). Exclusion criteria were pregnant state; symptoms or history of cardiovascular disease or cardiac risk factors; history of syncope, presyncope, migraine, epilepsy, or other neurological disorder; use of medication other than oral contraceptives; measured blood pressure greater than 160 mm Hg systolic or 100 mm Hg diastolic, or abnormal cardiac or pul-
monary examination findings immediately before the ride. Of 56 consecutive participants, 55 (37 men) were included in the study (Table 1); 1 was excluded due to history of cardiac disorder.

All participants underwent 12-lead Holter electrocardiogram recording from a minimum of 5 minutes before the roller coaster ride until a minimum of 5 minutes after the ride. The ride lasted 120 seconds, starting with a slow ascent for 30 seconds to a height of 62 m, followed by a 4-second free-fall period (4.5 g), and a 4-second negative-gravity-force air time element (−1.5 g). In the remaining 82 seconds, there were 6 more air times and several sharp curves. The maximum speed was 120 km per hour. Participants pressed the recorder marker button at the start of the ride so that the electrocardiograph recording could be mapped to particular sections of the ride.

Differences in heart rate by sex were tested using a 2-sample t test. Subgroup changes of the heart rate (baseline to maximum) were compared by paired t tests. The absence of relevant parameter estimates precluded a power analysis. A 2-sided P value <.05 was considered statistically significant. Descriptive statistics and other analyses were performed using SAS version 8.2 (SAS Institute Inc, Cary, North Carolina).

**Table 1.** Population Characteristics (N = 55)

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex, No. (%)</td>
<td></td>
</tr>
<tr>
<td>Men</td>
<td>37 (67)</td>
</tr>
<tr>
<td>Women</td>
<td>18 (33)</td>
</tr>
<tr>
<td>Age, mean (SD)</td>
<td>[range], y</td>
</tr>
<tr>
<td>28 (10) [18-71]</td>
<td></td>
</tr>
<tr>
<td>Height, mean (SD)</td>
<td>[range], cm</td>
</tr>
<tr>
<td>177 (8) [160-196]</td>
<td></td>
</tr>
<tr>
<td>Weight, mean (SD)</td>
<td>[range], kg</td>
</tr>
<tr>
<td>77 (13) [48-99]</td>
<td></td>
</tr>
<tr>
<td>Baseline heart rate, mean (SD)</td>
<td>[range], beats/min</td>
</tr>
<tr>
<td>89 (20) [51-147]</td>
<td></td>
</tr>
<tr>
<td>Smoker, No. (%)</td>
<td></td>
</tr>
<tr>
<td>26 (47)</td>
<td></td>
</tr>
</tbody>
</table>

**Table 2.** Changes in Heart Rate and Blood Pressure

<table>
<thead>
<tr>
<th></th>
<th>Mean (95% Confidence Interval) [Range]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Baseline</td>
</tr>
<tr>
<td>Heart rate, beats/min</td>
<td></td>
</tr>
<tr>
<td>Men</td>
<td>89 (84 to 95) [51-147]</td>
</tr>
<tr>
<td>Women</td>
<td>92 (83 to 101) [51-120]a</td>
</tr>
<tr>
<td>Difference</td>
<td>−4 (−13 to 5)</td>
</tr>
<tr>
<td>P valuea</td>
<td>.43</td>
</tr>
</tbody>
</table>

Systolic blood pressure, mm Hg

|                                | 127 (123 to 131) [105-160] | 146 (141 to 151) [120-190] |

Diastolic blood pressure, mm Hg

|                                | 81 (77 to 82) [60-100] | 86 (82 to 87) [70-110] |

*P < .001, paired t test.

*Men vs women, 2-sample t test.

*Values are missing because blood pressure changes were not measured during the ride.

Ethics Committee approval was given for this study and all participants provided written informed consent; they did not receive compensation.

**Results.** The mean (SD) heart rate increased from 89/min (20/min) before the ride to a maximum of 155/min (22/min) during the ride, followed by 109/min (27/min) at the end of the ride (Table 2). The largest increase in heart rate occurred during the first 30 seconds of the ascent. Heart rates were significantly higher in women than men at all points after the start of the ride, including the maximum heart rate (165/min vs 148/min; P = .01). There was a mean increase in blood pressure from baseline to end of the ride of 19 mm Hg systolic and 5 mm Hg diastolic.

In 24 (44%) of the 55 participants, asymptomatic sinus arrhythmias were recorded up to 5 minutes after the ride. One individual experienced a 4-second self-terminating episode of atrial fibrillation immediately after the end of the ride with a heart rate of 140/min, accompanied by palpitations. Another individual experienced an asymptomatic episode of nonsustained (3 complex) ventricular tachycardia 20 seconds after the start of the initial ascent.

**Comment.** In a group of presumably healthy individuals, this modern roller coaster ride led to a pronounced rise in heart rate. The largest rate increase occurred during the ascent, where speed was low and there were no significant acceleration forces, suggesting a contributing role of emotional stress. Limitations include the inability to measure changes in blood pressure during the ride, or to assess any effect of repeated exposures to the same ride.

A 1989 study reported an increase of heart rate in 13 persons riding a roller coaster, with a mean maximum rate of 154/min. Supraventricular or ventricular tachyarrhythmias were not detected. However, the roller coaster in that study had a maximum speed of only 64 km per hour and a maximum acceleration of 3 g. Contemporary roller coasters may...
achieve speeds greater than 200 km per hour and acceleration forces of 6g.3 In a systematic evaluation of 40 roller coaster fatalities over a 10-year period, at least 7 deaths were attributed to cardiac causes.4 Although the arrhythmias observed in our study of healthy individuals were benign, the magnitude of increase in heart rate raises the possibility of risk for individuals with underlying cardiac disease.

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Financial Disclosures: None reported.

Author Contributions: Dr Kuschyk had full access to all of the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis.

Study concept and design: Kuschyk, Borggrefe, Wolpert.

Acquisition of data: Kuschyk, Brade, Borggrefe, Haghi.

Analysis and interpretation of data: Kuschyk, Brade, Borggrefe, Wolpert, Haghi.

Drafting of the manuscript: Kuschyk, Borggrefe, Wolpert.

Critical revision of the manuscript for important intellectual content: Brade, Borggrefe, Wolpert, Haghi.

Statistical Analysis: Kuschyk, Brade, Wolpert.

Study supervision: Kuschyk, Borggrefe, Wolpert, Haghi.

Funding/Support: The Holter electrocardiogram recorder was provided from Mortara Instruments Inc, Milwaukee, Wisconsin.

Role of the Sponsor: Mortara Instruments Inc did not participate in the design and conduct of the study; collection, management, analysis, and interpretation of the data; or preparation, review, or approval of the manuscript.

Additional Contributions: We thank Mr Wolfgang Schneider, director, Holiday Park, Hassloch, Germany, and his staff for the opportunity to perform this study. We thank Axel Kobudzinski for the preparation of the recorded Holter electrocardiographs. Neither Mr. Kobudzinski nor Mr. Schneider received compensation for their role in the study.


CORRECTION

Typographical Error: In the Clinical Crossroads article entitled “A 59-Year-Old Man Considering Implantation of a Cardiac Defibrillator,” published in the May 2, 2007, issue of JAMA (2007;297[17]:1909-1916), a typographical error occurred on page 1909. The second to the last sentence of the sixth paragraph should read: “His chest was clear; his cardiovascular examination showed a normal S1 and S2 without murmurs or gallops.”
Saturated fatty acids increase levels of low-density lipoprotein cholesterol (LDL-C) and HDL-C, whereas trans-fatty acids increase LDL-C level but decrease HDL-C level. This distinction is important, because trans-fatty acids are more strongly associated with the risk of cardiovascular disease than saturated fatty acids due to their undesirable effects on LDL-C and HDL-C levels, endothelial cell function, adipocytes, and inflammatory response.

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In Reply: Dr Kim distinguishes the effects of saturated fatty acids and trans-fatty acids on lipoproteins. However, reports of the effect of trans-fatty acids on HDL-C have been variable, with a large meta-analysis finding a statistically non-significant effect on HDL-C. In addition to increasing levels of LDL-C, trans-fatty acids promote vascular inflammation and endothelial dysfunction and reduce paraoxonase activity. These lipid and biochemical effects act synergistically to increase cardiovascular disease risk.

The issue is more complex than indicated by HDL-C. Saturated fat rapidly promotes proinflammatory changes in HDL without changing HDL-C level. Thus, as mentioned in our review, dietary intake of both saturated fatty acids and trans-fatty acids should be avoided and substituted with intake of monounsaturated and polyunsaturated fatty acids.

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CORRECTIONS

Data Error: In the Review article entitled “Data Extraction Errors in Meta-analyses That Use Standardized Mean Differences” published in the July 25, 2007, Issue of JAMA (2007;298:430-437), Figure 4 included incorrect data. The reported point estimate and its 95% confidence interval for the meta-analysis standardized mean differences “−0.74 (−0.98 to −0.49)” for the Edmonds et al article should have read “−0.77 (−1.26 to −0.28).” The error was caused by a wrong label in the Cochrane Library at the time of the study. A meta-analysis was stated to have been done with a random-effects model; however, it was done with a fixed-effect model. The Cochrane Library no longer contains this error.

Typographical Errors in Tables: In the Research Letter entitled “Patterns of Prevalent Major Chronic Disease Among Older Adults in the United States” published in the September 12, 2007, Issue of JAMA (2007;298[10]:1160-1162), both tables contained typographical errors. In both tables, the column headings of “Estimated Frequency (×1000)” and “CVA” were erroneously transposed and the brace under the column head “Disease Pattern, No. of Diseases” should have extended to include the CVA column. Online versions of this article on the JAMA Web site were corrected on October 4, 2007.

Unreported Financial Disclosures: In the Original Contribution entitled “Non-pharmaceutical Interventions Implemented by US Cities During the 1918-1919 Influenza Pandemic” published in the August 8, 2007, Issue of JAMA (2007;298(6):644-654), financial disclosures were inadvertently not reported. On page 654, under “Financial Disclosures,” the following should appear: “Dr Markel reported having received honoraria for delivering lectures on the social and cultural history of the 1918-1919 influenza pandemic at academic conferences or colloquia presented by Yale University, the US Department of Defense, the RAND Corporation, Columbia University, the US Department of Health and Human Services, the Michigan Society for Infection Control and Prevention, University of Michigan, and Emory University. None of the other authors reported financial disclosures.”

Incorrect Affiliation: In the Research Letter entitled “Cardiovascular Response to a Modern Roller Coaster Ride” published in the August 15, 2007, Issue of JAMA (2007;298[7]:739-741), the affiliations were reversed for 2 authors and 1 author’s name was listed out of order. Joachim Brade, MSc, is affiliated with the Department of Medical Statistics and Dariusch Haghi, MD, is affiliated with the 1st Department of Medicine—Cardiology, University Hospital of Mannheim, Mannheim, Germany. The name for Christian Wolpert, MD, should have been placed last among the list of author names.