



Bündnis gegen Fluglärm



Wissenschaft, Kultur, Wirtschaft  
für eine lebenswerte Region

RMI Wissenschaftsforum in Kooperation mit Zukunft Rhein-Main  
Novelle des Fluglärmschutzgesetzes am 11.07.2016

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**Pressehandout/Factsheet: Prof. Dr. Thomas Münzel, Mainz**

### **Lärm und Bluthochdruck:**

#### **Aircraft noise and arterial hypertension:**

An increased prevalence of arterial hypertension in the vicinity of Stockholm airport was reported in 2001<sup>26</sup>. With respect to the early stages of hypertension, time-series study in the area surrounding the Frankfurt Airport showed that even in the physiological blood pressure range, a relationship exists between aircraft noise and early-morning blood pressure<sup>27</sup>. Two groups were followed over a period of three months; they were exposed to night-time outdoor aircraft noise of 50 dB(A): the "Western Group" for 75% of the time, and the "Eastern Group" for 25% of the time. The evaluation of a total of 8266 blood pressure measurements from 53 individuals yielded a statistically significant higher blood pressure level of 10/8 mm Hg above that of the Eastern Group.

Similarly, a dose-response relationship has been shown in the HYENA study with respect to night-time noise<sup>6</sup>. A 14% increase in OR (95% CI=1.01-1.29; P=0.031) for arterial hypertension was in this study associated with every 10 dB increase in  $L_{night}$ ; in contrast, no effect was found for daytime aircraft noise exposure (LAeq: OR=0.93, 95% CI=0.83-1.04; P=0.19). Data from the European Union-funded RANCH (Road Traffic and Aircraft Noise Exposure and Children's Cognition and Health) study reported an association between both daytime and nocturnal noise exposure at home and blood pressure values in 9-10 year old-children living near Schiphol (Amsterdam) or Heathrow (London)<sup>28</sup>. A meta-analysis of 4 cross-sectional and 1 cohort study on the relationship between aircraft traffic noise and the prevalence of hypertension reported an OR of 1.13 (95% CI=1.00-1.28; P<0.001) per 10 dB increase of the day-night weighted noise level ( $L_{DEN}$ ) in the range <55 to >65 dB<sup>29</sup>.

Studies carried out repeatedly in the area neighboring Amsterdam's Schiphol airport reported a higher prevalence of prescriptions for cardiovascular medications (OR ranging between 1.2 and 1.4 between high and low noise groups)<sup>30</sup>. Likewise, a cross-sectional study data from the Cologne airport region in Germany demonstrated higher individual rates of cardiovascular medicine prescriptions in residents exposed to high aircraft noise levels, particularly during the night and the early morning hours (3-5h)<sup>31</sup>. Higher risks were found for subjects for whom the average noise level during the late night period exceeded 40 dB. Results from the HYENA study also suggest an effect of aircraft noise on the use of antihypertensive medication, but this effect did not hold for all participating study centers<sup>32</sup>. Results were more consistent across centers for the increased use of anxiolytics in relation to aircraft noise<sup>32</sup>.

Thus, taken together, based on the existing literature, a causal relation between exposure to noise and elevation blood pressure appears to be scientifically confirmed. The consequence is that noise per se, as an environmental stressor should be considered as a novel cardiovascular risk factor, a risk factor that cannot be influenced by patients or by doctors but rather by policy makers with anti-noise laws that protect people living close to airports rather than protecting people who operate the airport.

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**Studium der Medizin in Freiburg**

Facharztausbildung Innere Medizin an der Albert Ludwigs-Universität Freiburg unter der Leitung von Univ.-Prof. Dr. med. Hanjörg Just

Zusatzbezeichnung Kardiologie und Ausbildung in interventioneller Kardiologie an der Universitätsklinik Eppendorf, Hamburg unter der Leitung von Univ.-Prof. Dr. med. Thomas Meinertz

Professor Münzels Forschungsschwerpunkte umfassen präklinische und klinische Studien, die die Erforschung der zugrunde liegenden Mechanismen aber auch der prognostischen Bedeutung der endothelialen Dysfunktion zum Ziel haben. Insbesondere werden die Beziehung der endothelialen Dysfunktion zu oxidativem Stress in der Einstellung von Hypercholesterinämie, arterieller Hypertonie und chronischer Herzinsuffizienz sowie die zugrunde liegenden Mechanismen des Phänomens von Nitrat-Toleranz untersucht. In diesem Zusammenhang befasst er sich mit den Auswirkungen von neuen Herzkreislauftrisikofaktoren wie Lärm und Feinstaub auf die Gefäße und das Herzkreislaufsystem.

Prof. Münzel initiierte das integrierte Forschungs- und Behandlungszentrum für Thrombose und Hämostase (CTH; [www.cth-mainz.de](http://www.cth-mainz.de)) in Mainz. Mainz ist außerdem ein Standort des Deutschen Zentrums für Herz-Kreislauf-Forschung zusammen mit Frankfurt und Bad-Nauheim (<http://dzhk.de/standorte/rheinmain>).

Zusammen mit Professor Blankenberg begründete er die Gutenberg-Gesundheitsstudie (<http://www.gutenberghealthstudy.org>), die 15.000 Menschen in einer großen, prospektiven Kohorte auf kardiovaskuläre Risikofaktoren untersucht. Ein Teilaspekt dieser Studie ist die Untersuchung der prognostischen Rolle der endothelialen Dysfunktion. Prof. Münzel ist auch verantwortlich für das Chest Pain Unit Zertifizierungsprogramm in Deutschland (<http://cpu.dgk.org>). Darüber hinaus ist er Initiator der Stiftung Mainzer Herz (<http://www.herzstiftung-mainzer-herz.de>).