Reanimation beim Sportler – ein besonderer Challenge?

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Risk
the paradox of exercise

- Although regular exercise reduces the risk of cardiovascular disease, the risk of an acute cardiac event is transiently increased (5 to 10 fold) during and immediately after acute, mainly vigorous exercise.

Thompson et al. Circulation 2007, 115;
Corrado et al. J Am Coll Cardiol 2003, 42;
Corrado et al. Eur Heart 2005, 26;
Link et al. Circulation 2012, 125;
Despite this paradox and the worldwide discussion on the prevention of exercise-related events, population-based information on the incidence and prognosis of exercise-related out-of-hospital cardiac arrests (OHCA) is scarce.
Risk

sport-related cardiac arrest

• 0.5–2.1 per 100 000 persons-years vs. 35.5 per 100 000 person-years for non-exercise-related OHCA in the Dutch study.

• much more man than women (as far as 20:1)

• 900 deaths in Germany/year

Berdowski et al Eur Heart J 2013, 34
Maron BJ et al. JACC 1996, (2)
Van Camp SP, Peterson RA, JAMA 1986
Marijon et al. Europ Heart J 2013, 34
Risk relations

- death in Marathon: 0.8 per 100,000 persons/y
- death in Triathlon: 1.5 pro 100,000
- death in Diabetes: 23 pro 100,000
- death in car accidents: 1:6700
Incidence OHCA (out of hospital cardiac arrest)

- OHCAs of cardiac origin in persons aged 10–90 years over a 3-year period in the Dutch province North Holland (n = 2624)

- (6%) arrests were exercise related

Marijon et al Eur Heart J 2013, 34
Berdowski et al Eur Heart J 2013, 34
### Table 3  Survival rates of exercise-related and non-exercise-related out-of-hospital cardiac arrest

<table>
<thead>
<tr>
<th></th>
<th>Exercise related</th>
<th>Non-exercise related</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>Survival (%)</td>
<td>n</td>
</tr>
<tr>
<td>All</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All</td>
<td>143</td>
<td>46.2</td>
<td>2381</td>
</tr>
<tr>
<td>Men</td>
<td>133</td>
<td>47.4</td>
<td>1719</td>
</tr>
<tr>
<td>Women</td>
<td>10</td>
<td>30.0</td>
<td>658</td>
</tr>
<tr>
<td>≤35 years</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All</td>
<td>7</td>
<td>14.3</td>
<td>62</td>
</tr>
<tr>
<td>Men</td>
<td>6</td>
<td>16.7</td>
<td>43</td>
</tr>
<tr>
<td>Women</td>
<td>1</td>
<td>0</td>
<td>19</td>
</tr>
<tr>
<td>&gt;35 years</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All</td>
<td>136</td>
<td>47.8</td>
<td>2319</td>
</tr>
<tr>
<td>Men</td>
<td>127</td>
<td>48.8</td>
<td>1676</td>
</tr>
<tr>
<td>Women</td>
<td>9</td>
<td>33.3</td>
<td>639</td>
</tr>
</tbody>
</table>

*All survivors of exercise-related out-of-hospital cardiac arrest were neurologically intact. The percentages between parentheses in the non-exercise-related group indicate those surviving neurologically intact.

Of four cases (all non-exercise related and > 35 years old) sex was not known. P-value calculated with Pearson χ² or Fisher’s Exact Test (two-sided) where appropriate.
incidence of exercise-related OHCA is low

favourable outcome: 46 % of victims survive the event compared with 17 % of non-exercise-related OHCA in victims > 35 y (Dutch registry)

among the 143 exercise-related OHCA, mean age was 59 y and 93% were men

Overall, survival after OHCA was significantly higher when the arrest occurred in a public location, was bystander witnessed, if an AED was used, if the patient had a shockable initial rhythm, and if EMS (Emergency medical services) response time was shorter
variation in outcome

- in the French registry (820 SCA, 5 year) the overall survival was 16 %, varying for 3 % to 44 % in regions (best in Cote d'or Burgundy and the Nord region)

- known great variation survival rates after OHCA, whether exercise related or not throughout the world

- cardiac arrest on the tennis court (Vienna) had a survival rate of 82 % at 6 months (20 of 27 pat.) – predominantly witnessed events

Marijon et al. Europ Heart J 2013, 34
Berdowski et al. Resuscitation 2010, 81
Stratil et al. Resuscitation 2011
Frankreich
Französischer Fußballprofi stirbt nach Herzinfarkt

Donnerstag, 22.01.2009, 21:11

Der 23-jährige französische Fußballprofi Clement Pinault ist an den Folgen eines Herzinfarktes verstorben. In Frankreich ist er bereits der zweite Sportler binnen weniger Tage.

Marathon

Geht es um Leben und Tod?

Der Hamburg-Marathon wurde vom Todesfall eines Läufers überschattet. Dennoch ist an den gesundheitsfördernden Aspekten des Ausdauersports Allgemeinen nicht zu rütteln.

23.04.2002, von FRANK HELLMANN, HAMBURG

Eine Form der Flüssigkeitszufuhr beim Marathon

Am Tag danach sind stets Zweifel erlaubt. Mit letzter Kraft schleppen Marathonläufer die Treppe hinauf. Alles, was die Beine bewegt, ist
challenges

• exercise is important for physical and mental fitness and prevent cardiovascular disease

• high emotional response of the public

• at the same time the public are exposed to alarmist mass media coverage of athletes or ordinary people collapsing during different sport activities

• raising uncertainties, questions and debate within communities

• it is therefore of utmost importance to document the current reality of sports related SCA
We need well-organized programmes for educating lay people in Basic Life Support (BLS).

The Dutch have a long interest and research tradition in cardiac arrest management, as well as early adoption and high use of public AED programmes.

They have long had positive experiences with community programmes for the use of AEDs.

More CPR means a higher rate of initial shockable rhythms.
London 2012
summary

• sports-related cardiac arrests are rare

• information should be used in attempt to limit the anxiety regarding exercise related fatal emergencies

• encouraging the general public and recommending exercise at different levels

• competitive athletes aged 35 years or younger seem to have a higher risk of SCA the recreational athletes

• screening programmes are necessary
thank you

….fit happens

THE DIFFERENCE BETWEEN WHO YOU ARE AND WHO YOU WANT TO BE IS WHAT YOU DO.