STATE OF HYDRATION AFTER SPORTS IN OBESE CHILDREN BEFORE AND AFTER WEIGHT LOSS

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Disclosures

No disclosures
Introduction

Healthy children: signs of dehydration or functional hypovolemia after sports (1,2,3)

Obese adults: more at risk for dehydration after sports than healthy adults (4)

References:
(2) Kavouras. Assessing hydration status. 2002
First part of the study

Obese children: no typical signs of dehydration after a cooper-test\(^{(5)}\)

References:
Aim of the study

» Hypothesis:
Re-appearance of a normal functioning renin-aldosterone system (RAA-system) in obese children after following a standardized slimming program of one year
Materials and methods (1)

- **2 test moments:**
  - July 2013: 66 obese children (mean age 15y (+-1))
    - Residential slimming program (Zeepreventorium)
  - June 2014: 38 children (15 obese, 23 non-obese)
Materials and methods (2)

Parameters collected before and after a cooper-test:

- Measured:
  - Urine-analysis: excretion of sodium, chloride, potassium, urea, creatinine, protein and osmolality
  - Body weight
  - Blood pressure
  - Pulse
  - Outdoor T°

- Calculated
  - $U_K/(U_{Na}+U_K) = \text{parameter aldosterone-effect}^{(1)}$
  - BMI Z-score

Results : before and after weight loss

<table>
<thead>
<tr>
<th></th>
<th>JULY (SD)</th>
<th>JUNE (SD)</th>
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<tbody>
<tr>
<td>n</td>
<td>66</td>
<td>38</td>
</tr>
<tr>
<td>Age (y)</td>
<td>15 (1)</td>
<td>16 (1)*</td>
</tr>
<tr>
<td>BMI Z-score†</td>
<td>2.52 (0.32)</td>
<td>1.52 (0.43)*</td>
</tr>
<tr>
<td>Pulse (bpm) †</td>
<td>92 (15)</td>
<td>71 (12)*</td>
</tr>
<tr>
<td>Syst BP (mmHg) †</td>
<td>135 (16)</td>
<td>121 (13)*</td>
</tr>
<tr>
<td>Diast BP (mmHg) †</td>
<td>79 (9)</td>
<td>71 (10)*</td>
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</tbody>
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† pre-coopertest, *p<0.01
<table>
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<th>JULY (SD)</th>
<th>JUNE (SD)</th>
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</thead>
<tbody>
<tr>
<td>$U_K/(U_N + U_K)$ (%) pre-cooper</td>
<td>40 (11)</td>
<td>50 (11)*</td>
</tr>
<tr>
<td>$U_K/(U_N + U_K)$ (%) post-cooper</td>
<td>43 (15)</td>
<td>57 (12)*</td>
</tr>
</tbody>
</table>

*p<0.01

No significant difference between the pre and post coopertest values in June
Results: before and after sports in June
Conclusions

After losing weight a significant higher aldosterone-effect ($U_K/(U_{Na}+U_K)$) was demonstrated in the non-obese group which confirms a re-appearance of a normal functioning RAA-system.