

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

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Pediatrics

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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:

- (1) Pilot study Ugent of Van den broecke M. and Peremans L. Vocht- en elektrolytenbeleid bij sportende kinderen. Scriptie voorgedragen in de 2^{de} Master in kader van de opleiding Master of Medicine in de Geneeskunde. Academiejaar 2013-2014.
- (2) Kavouras. Assessing hydration status. 2002
- (3) Vande Walle J et al. Renal sodium handling in children with nephrotic relapse: relation to hypovolaemic symptoms. Nephrol Dial Transplant. 1996;11:2202-2208.
- (4) Eijsvogels TM et al. The impact of obesity on physiological responses during prolonged exercise. International journal of obesity. 2011;35(11):1404-12.

First part of the study

- ➔ **Obese children: no typical signs of dehydration after a cooper-test⁽⁵⁾**

References:

- (5) Pilot study Ugent of Bentin F., Vandenbossche D., De Graeve L. Vocht- en elektrolytenbeleid bij sportende kinderen met obesitas. Scriptie voorgedragen in de 2^{de} Master in kader van de opleiding Master of Medicine in de Geneeskunde. Academiejaar 2013-2014.

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

(1) Vande Walle J et al. Renal sodium handling in children with nephrotic relapse: relation to hypovolaemic symptoms. Nephrol Dial Transplant. 1996;11:2202-2208.

Results : before and after weight loss

	JULY (SD)	JUNE (SD)
n	66	38
Age (y)	15 (1)	16 (1)*
BMI Z-score †	2.52 (0.32)	1.52 (0.43)*
Pulse (bpm) †	92 (15)	71 (12)*
Syst BP (mmHg) †	135 (16)	121 (13)*
Diast BP (mmHg) †	79 (9)	71 (10)*

† pre-coopertest, *p<0.01

	JULY (SD)	JUNE (SD)
$U_K / (U_{Na} + U_K)$ (%) pre-cooper	40 (11)	50 (11)*
$U_K / (U_{Na} + U_K)$ (%) post-cooper	43 (15)	57 (12)*

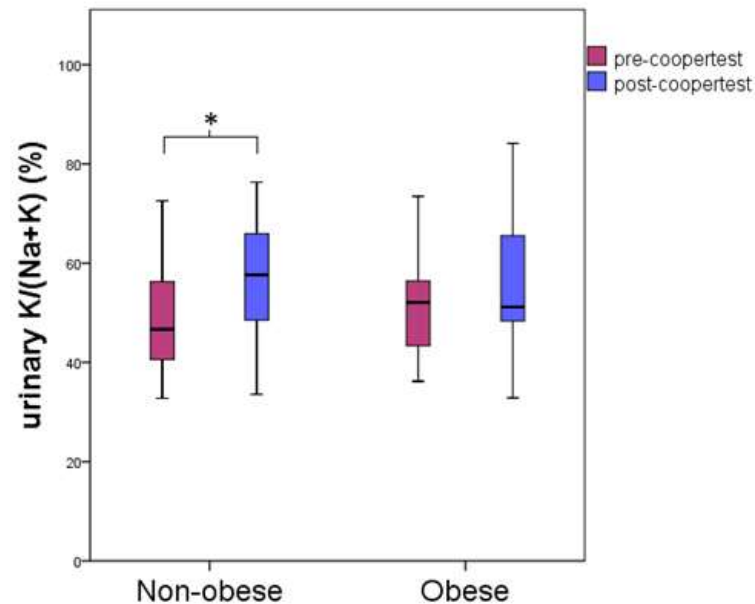
*p<0.01

	JUNE (SD)
$U_K / (U_{Na} + U_K)$ (%) pre-cooper	50 (11)
$U_K / (U_{Na} + U_K)$ (%) post-cooper	57 (12)



**No significant difference
 between the pre and post
 coopertest values in June**

Results : before and after sports in June



	NON-OBESE (n=23)		OBESE (n=15)	
	PRE (SD)	POST (SD)	PRE (SD)	POST (SD)
$U_K / (U_{Na} + U_K)$ (%)	49 (11)	56 (12)*	51 (11)	57 (15)

*p<0.01

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**