



Maroje Sorić

Uhranjenost, tjelesna aktivnost i sedentarno ponašanje hrvatskih adolescenata

# O ČEMU GOVORIMO...

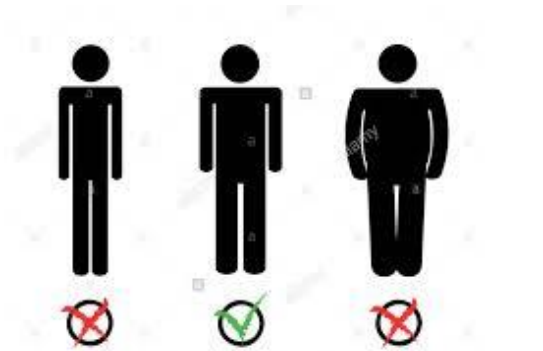
KAD GOVORIMO O:

- uhranjenosti
- tjelesnoj aktivnosti
- sedentarnom ponašanju



# UHRANJENOST

- i premala i prekomjerna težina skraćuju život
- indeks tjelesne mase
  - $(\text{masa}/\text{visina}^2)$
- adolescenti: poželjne vrijednosti ovise o dobi i spolu



# TJELESNA AKTIVNOST

- svaki pokret tijela....



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- prerana smrtnost, fizičko i mentalno zdravlje, akademski uspjeh...
- adolescenti: minimalno 60 minuta dnevno umjerene ili visoko intenzivne TA
- $> 4 \text{ kcal/kg/h}$



# SEDENTARNO PONAŠANJE

- sva ponašanja koja uključuju sjedenje i ležanje osim spavanja
  - najsnažnija povezanost s poremećenim zdravljem: vrijeme provedeno pred ekranima
- adolescenti: maksimalno 120 minuta dnevno pred ekranima



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# PREVALENCIJA



International Journal of  
*Environmental Research  
and Public Health*



Article

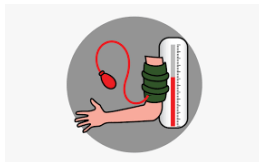
## Prevalence of Key Modifiable Cardiovascular Risk Factors among Urban Adolescents: The CRO-PALS Study

Ivan Radman <sup>1,\*</sup>, Maroje Sorić <sup>1,2</sup> and Marjeta Mišigoj-Duraković <sup>1</sup>



## METODE

- 844 sudionika
- 15,6 (+/- 0,5) godina
- SHAPES upitnik
- mjerenje:
  - visine,
  - težine,
  - opsega struka
  - krvnog tlaka



# PREVALENCIJA



International Journal of  
*Environmental Research  
and Public Health*

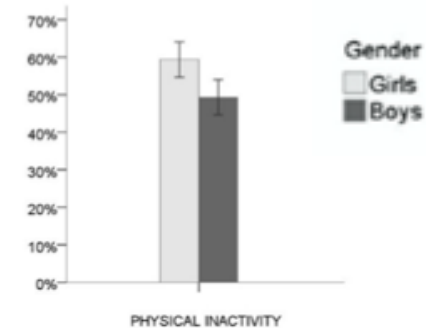
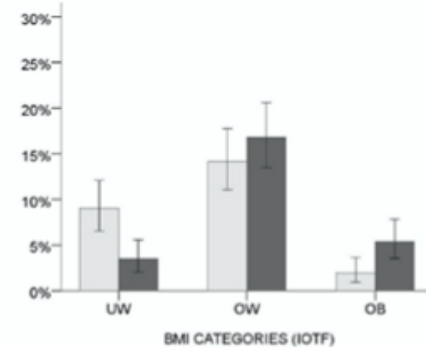


Article

## Prevalence of Key Modifiable Cardiovascular Risk Factors among Urban Adolescents: The CRO-PALS Study

Ivan Radman <sup>1,\*</sup>, Maroje Sorić <sup>1,2</sup> and Marjeta Mišigoj-Duraković <sup>1</sup>

- ✓ uhranjenost
  - ✓ Prekomjerna težina:
    - ✓ dječaci: **22.2%** (95%CI=18.5–26.3)
    - ✓ djevojke: **16.1%** (95%CI=12.8–19.9)
  - ✓ pothranjenost:
    - ✓ oko 9% kod djevojkama i 3% kod dječaka
- ✓ tjelesna neaktivnost:
  - ✓ **50%** dječaci
  - ✓ **60%** djevojčice
- ✓ pretjerano korištenje ekrana
  - ✓ **oko 90%** kod oba spola



# TJELESNA AKTIVNOST: UČINAK ŠKOLE



International Journal of  
*Environmental Research  
and Public Health*



Article

## Is School Type Associated with Objectively Measured Physical Activity in 15-Year-Olds?

Lovro Štefan \* , Maroje Sorić , Antonela Devrnja, Hrvoje Podnar   
and Marjeta Mišigoj-Duraković



## METODE

- 187 adolescenata
- multi-senzorni mjerač tjelesne aktivnosti
- 5 dana praćenja





# TJELESNA AKTIVNOST: UČINAK ŠKOLE



International Journal of  
*Environmental Research  
and Public Health*



Article

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and Marjeta Mišigoj-Duraković

Study Variables	Boys (N = 72)		Girls (N = 115)		p-Values *		
	Grammar	Vocational	Grammar	Vocational	Gender	School	Gender * School
	N = 41	N = 31	N = 64	N = 51			
Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)				
TEE (kcal/kg/day)	55.1 (12.6)	52.4 (10.2)	47.7 (11.5)	42.6 (9.8)	0.04	0.02	0.21
AEE (kcal/kg/day)	24.3 (5.2)	22.6 (6.5)	21.8 (5.6)	20.0 (6.9)	<0.01	0.04	0.96
LPA (min/day)	321 (89)	318 (123)	351 (111)	316 (128)	0.3	0.43	0.36
MPA (min/day)	114 (54)	111 (42)	81 (43)	70 (50)	<0.001	0.32	0.39
VPA (min/day) #	24 (9-47)	21 (7-39)	4 (1-12)	2 (0-8)	<0.001	0.09	0.42

# median (lower quartile-upper quartile); \* p-values from ANCOVA of the main effects of school and gender and for gender \* school interaction adjusted for biological age, S4SE, SFS, T<sub>max</sub> and the amount of rainfall.

## REZULTATI

- ✓ djevojke znatno manje aktivne
- ✓ gimnazijalci troše oko **3 kcal/kg/dan** više
- ✓ oko **2 kcal/kg/dan** više TA (ili 2 MET\*h dnevno)
- ✓ podjednako i djevojčice i dječaci

neovisno o zrelosti, uhranjenosti, socio-ekonomskom statusu



# TJELESNA AKTIVNOST: UČINAK ŠKOLE



International Journal of  
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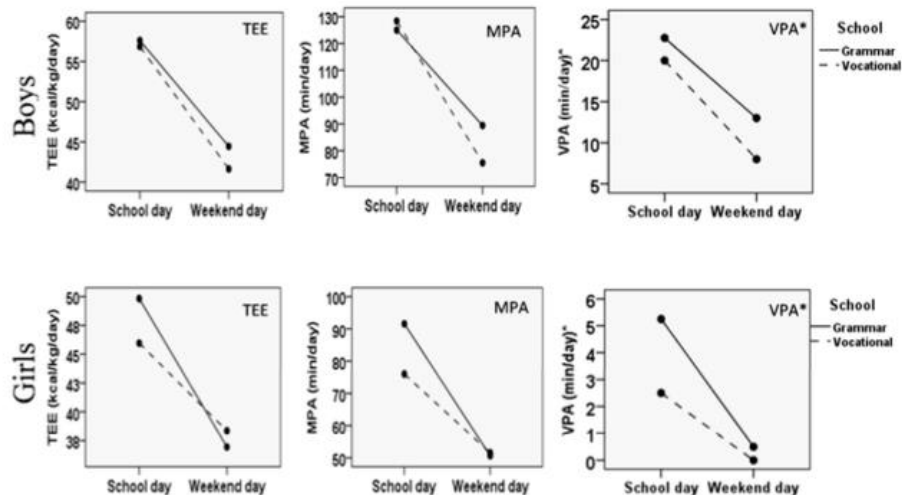


Article

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- ✓ 20-30% niži utrošak energije preko vikenda
- ✓ 40-45% manje trajanje TA umjerenog intenziteta
- ✓ 70-90% manje trajanje TA visokog intenziteta



\*denotes using median values



# POČETNE PROMJENE

DE GRUYTER

International Journal of Adolescent Medicine and Health. 2018; 20170223

Lovro Štefan<sup>1</sup> / Maroje Sorić<sup>2,3</sup> / Antonela Devrnja<sup>2</sup> / Vilko Petrić<sup>4</sup> / Marjeta Mišigoj-Duraković<sup>2</sup>

## One-year changes in physical activity and sedentary behavior among adolescents: the Croatian Physical Activity in Adolescence Longitudinal Study (CRO-PALS)



## METODE

- follow-up 1 godina (između 1. i 2. razreda)
- 81 sudionik
- TA:
  - multi-senzorni mjerac tjelesne aktivnosti
  - 5 dana praćenja
- SEDENTARNO PONAŠANJE
  - SHAPES upitnik



# POČETNE PROMJENE

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## One-year changes in physical activity and sedentary behavior among adolescents: the Croatian Physical Activity in Adolescence Longitudinal Study (CRO-PALS)

Study variables	Boys (n = 28)			Girls (n = 53)		
	Baseline	Follow-up	p-Value	Baseline	Follow-up	p-Value
<b>Physical activity</b>						
TEE, kcal/kg/day	54 (12)	41 (6)	<0.001	47 (12)	37 (9)	<0.001
AEE, kcal/kg/day	26 (7)	19 (7)	<0.001	19 (7)	13 (8)	0.04
VPA, min/day <sup>a</sup>	22 (9–44)	8 (3–18)	<0.001	5 (1–12)	2 (2–6)	0.003
MPA, min/day	121 (51)	72 (29)	<0.001	79 (41)	58 (41)	<0.001
<b>Sport participation</b>						
SP outside of school <sup>b</sup>	15 (54)	13 (46)	0.59	24 (45)	15 (28)	0.07
SP in school <sup>b</sup>	5 (18)	5 (18)	1.00	12 (23)	14 (26)	0.65
<b>Sedentary behaviors</b>						
TSB, min/day <sup>a</sup>	395 (260–626)	358 (261–719)	0.75	366 (279–532)	394 (256–566)	0.65
ST, min/day <sup>a</sup>	231 (130–381)	213 (124–488)	1.00	193 (107–315)	171 (122–281)	0.58
Studying, min/day <sup>a</sup>	100 (69–177)	93 (57–174)	0.52	146 (85–200)	137 (91–206)	0.86
Other SB activities, min/day <sup>a</sup>	30 (16–71)	32 (12–101)	0.90	34 (17–73)	34 (15–85)	0.92

<sup>a</sup>Median (lower-upper IQR). <sup>b</sup>Frequencies (N) and percentages (%). p-Values are given separate for boys and girls within two measurements and were calculated from a paired sample t-test (for normally distributed variables) or the Wilcoxon test (for not-normally distributed variables).

## REZULTATI

- ✓ količina i trajanje TA se smanjuje i kod djevojčica i kod dječaka
  - ✓ -50% kod dječaka!
- ✓ sedentarno ponašanje se nije mijenjalo
- ✓ više od 1/3 djevojka se prestalo baviti sportom

# POČETNE PROMJENE

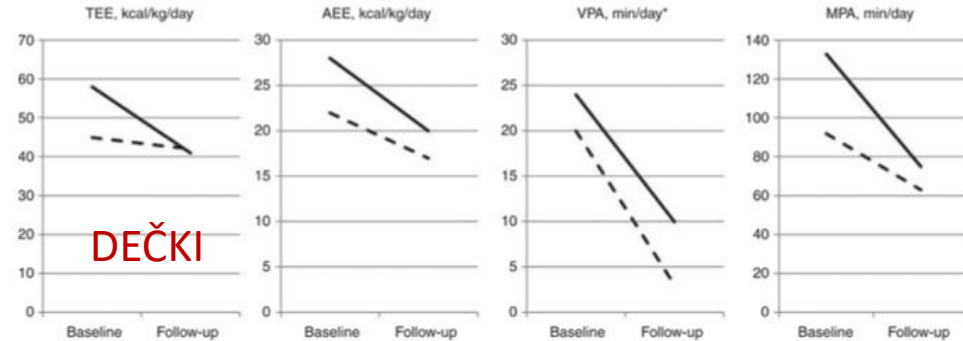
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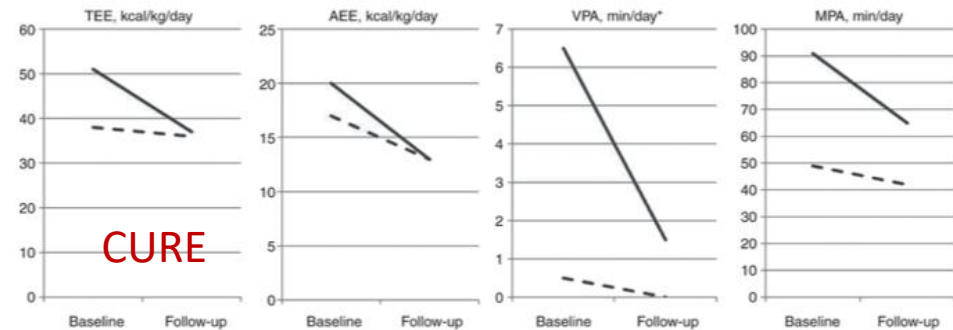
Lovro Štefan<sup>1</sup> / Maroje Sorić<sup>2,3</sup> / Antonela Devrnja<sup>2</sup> / Vilko Petrić<sup>4</sup> / Marjeta Mišigoj-Duraković<sup>2</sup>

## One-year changes in physical activity and sedentary behavior among adolescents: the Croatian Physical Activity in Adolescence Longitudinal Study (CRO-PALS)

- ✓ smanjenje utroška energije i trajanja TA umjerenog intenziteta je znatno veće tijekom školskog tjedna
- ✓ podjednako i djevojčice i dječaci
- ✓ sedentarno ponašanje se nije mnogo mijenjalo



school days (——) and weekends (- - - - -)







# STABILNOST PONAŠANJA



Article

## Tracking of Physical Activity, Sport Participation, and Sedentary Behaviors over Four Years of High School

Lovro Štefan <sup>1,\*</sup> , Marjeta Mišigoj-Duraković <sup>1</sup>, Antonela Devrnja <sup>1</sup>, Hrvoje Podnar <sup>1</sup> , Vilko Petrić <sup>2</sup>  and Maroje Sorić <sup>1,3</sup> 

## METODE

- praćenje: 3 godine (između 1. i 4. razreda)
- 844 sudionika
- SHAPES upitnik







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Study Variables	Boys (N = 429)			Girls (N = 415)		
	Tracking Coefficient	95% CI	<i>p</i>	Tracking Coefficient	95% CI	<i>p</i>
<b>Physical activity</b>						
VPA	0.61	0.54 to 0.67	<0.001	0.59	0.52 to 0.66	<0.001
MPA	0.49	0.43 to 0.56	<0.001	0.53	0.45 to 0.60	<0.001
PAEE	0.57	0.51 to 0.63	<0.001	0.59	0.52 to 0.67	<0.001
<b>Sedentary behaviors</b>						
TSB	0.63	0.57 to 0.69	<0.001	0.60	0.53 to 0.66	<0.001
ST	0.60	0.54 to 0.66	<0.001	0.64	0.58 to 0.70	<0.001
Studying	0.66	0.61 to 0.72	<0.001	0.70	0.65 to 0.76	<0.001
Other SB	0.72	0.64 to 0.81	<0.001	0.63	0.55 to 0.71	<0.001

VPA-vigorous physical activity; MPA-moderate physical activity, PAEE-physical activity energy expenditure; TSB-total sedentary behavior; ST-screen-time; Other SBs include reading for fun, listening to music, and playing an instrument.

## REZULTATI

- ✓ stabilnost TA je umjerena
- ✓ stabilnost sedentarnih ponašanja je umjerena-do-visoka
- ✓ nema razlike među spolovima
- ✓ stabilnost viša za visoko-intenzivnu TA

# STABILNOST PONAŠANJA

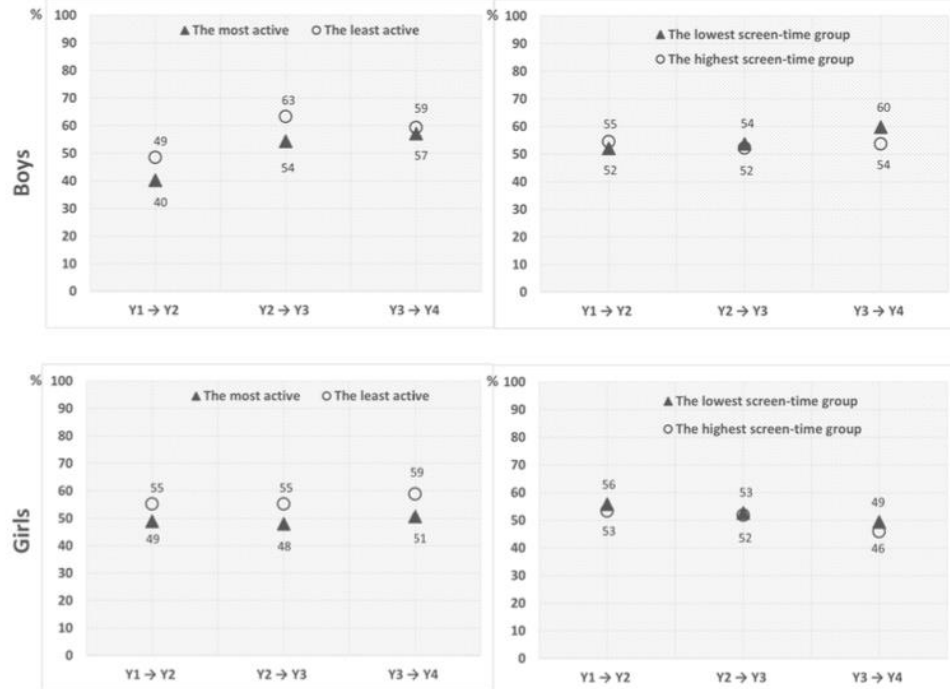


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- ✓ **12 i 13x** veća šansa za vrlo nisku aktivnost kod prvotno neaktivne djece
- ✓ **13 i 15x** veća šansa za visoku aktivnost kod prvotno aktivne djece
- ✓ **14 i 16x** veća šansa za mnogo vremena pred ekranom kod djece koja su bila u toj grupi na početku školovanja
- ✓ **13 i 12x** veća šansa za malo vremena pred ekranom kod djece koja su bila u toj grupi na početku školovanja









# STABILNOST PONAŠANJA

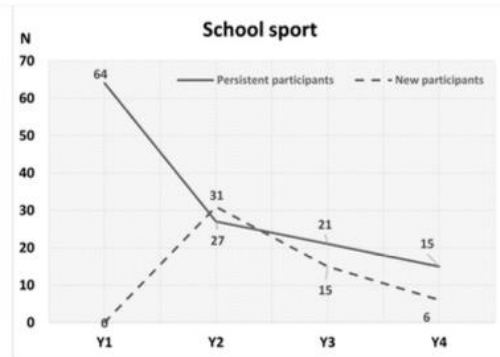
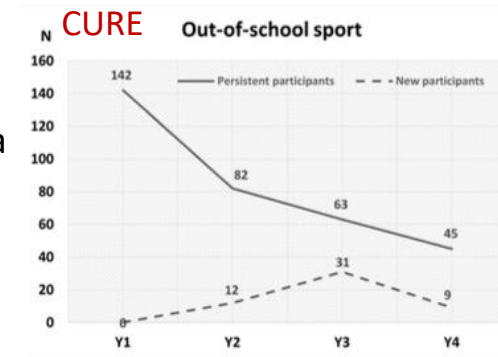
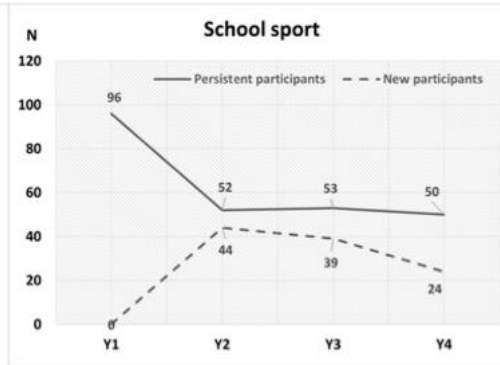
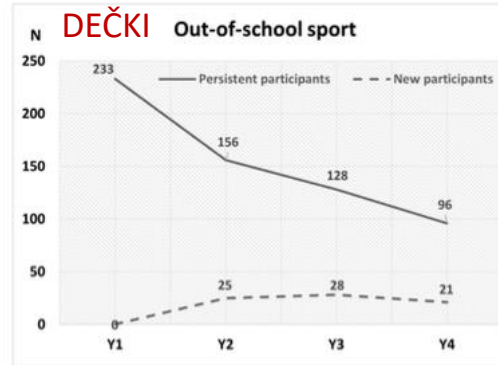


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- ✓ više od 50% djece se prestane baviti sportom
- ✓ 24x i 28x veća šansa za bavljenje sportom za dječake i djevojke koji su se bavili sportom u 1. razredu
- ✓ stabilnost veća za timске sportove kod dječaka, a individualne kod djevojaka



**One down...**



**six more to go**