Lifestyle and Dietary Habits in Renal Transplanted Patients

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Background

❖ Renal Transplantation (RTx) is hampered by high cardiovascular (CV) risk

❖ Lifestyle and eating habits may represent potent modifier of RTx patient

❖ No reliable data exist on lifestyle, physical activity and nutrient intake in RTx

Aim

To evaluate the comprehensive functional and nutritional profile in stable Renal Transplanted Patients

Subjects & Groups

❖ Matched, case-control, study

❖ Consecutive, adult patients with stable renal transplant (from at least 6 months) in absence of any acute disease (from al least 3 months) [**RTx group, 198**]

❖ Controls (cohabitants without renal disease) with the same socio-economic and cultural status [**CON group, 136**]

Measurements

A. Continuous measurements of Physical Activity (PA) (duration and intensity) along three consecutive days by mean of *SenseWear Armband®* (BodyMedia, Pittsburgh, USA) a clinically-validated accelerometer device collecting in a free-living context:
- daily number of steps
- daily physical activity duration
- physical activity intensity

B. Smoking

C. Nutritional status & Body composition (anthropo-plicometry, bioimpedance analysis, dynamometry)

D. Nutrients intake (dietary diaries, interviews, 24-h urine)

Subjects Characteristics

	RTx	CON	p
Subjects, *n*	198	136	---
Gender, *M%*	59	49	0.07
Age, *years*	50±12	50±13	0.89
Diabetics, *%*	11	5	0.09
Previous CV events, *%*	11	---	---
Charlson Index	2.8±2.0	---	---
eGFR[MDRD], *ml/min[1.73m2]*	52 [38-68]	---	---
Dialysis-age, *years*	34 [22-66]	---	---
RTx-age, *years*	67 [20-139]	---	---
Barthel, *n*	99.6±3.1	99.7±0.4	0.11
Karnowsky, *n*	96.3±6.8	99.3±3.1	<0.001

Social Status

	RTx	CON	p
Education, %			<0.001
Elementary	10.2	8.9	
Middle	41.6	16.3	
High	41.6	41.5	
University	6.6	33.4	
Marital status, %			0.04
Single	9.0	25.4	
Married	89.5	73.0	
Divorced	1.5	1.6	

Employment

	RTx	CON	p
Employment, %			<0.001
Unemployed	12.7	1.5	
Hand workers	6.0	5.2	
Office workers	13.9	23.0	
Professional workers	16.3	33.3	
Retired	24.7	17.8	
Home	19.3	10.4	
Student	3.0	6.7	
Teacher	3.0	0.7	
Merchant	1.2	1.5	

Weight & Smoke

	RTx	CON	p
Height, *cm*	165±10	167±10	0.16
Weight, *kg*	74±15	77±17	0.14
BMI, *kg/m²*	27.1±4.9	27.5±5.4	0.52
- normal-weight < 25	36 %	32 %	
- over-weight 25-29.9	42 %	40 %	
- Obese ≥ 30	22 %	28 %	
Smokers, %			0.24
- no	67 %	65 %	
- current	15 %	21 %	
- ex	18 %	14 %	

Met. Syndrome

	RTx
Parameters, %	
High blood pressure	41
High Tryglicerides	17
High glucose	12
High HDL	22
Abdominal Obesity	62
3 or more parameters	53

Immunosupp. Drugs

	RTx
Number, %	
1	17
2	78
3	3
Drugs, %	
Steroids	88
Other immunosuppressors	98
• Cyclosporine	60
• Tacrolimus	35
• MMF	74
• Everolimus	8
• Azatioprine	3
• Rapamicine	0,5

Other Drugs

	RTx
Number lowering BP, %	
1	35
2	35
3	10
Drugs, %	
ACE-inhibitors	35
Other BP-lowering	80
Erythropoietin	9
Furosemide	16
Anti-platelets	23
Statins	24
Antidiabetics	5
Calcium	25
Vitamin-D	28

Physical Activity Amount

P < 0.001

| Steps, *n/day* | 9.096±4.298 | 10.775±3.981 |

PA Amount for Gender

Females — Median = 7.907 steps, Subjects less 10.000 = 66%
Males — Median = 8.702 steps, Subjects less 10.000 = 68%

Physical Activity Intensity

P = 0.04

| PA ≥ 3 METs, *min/day* | 80 [42-168] | 105 [66-108] |
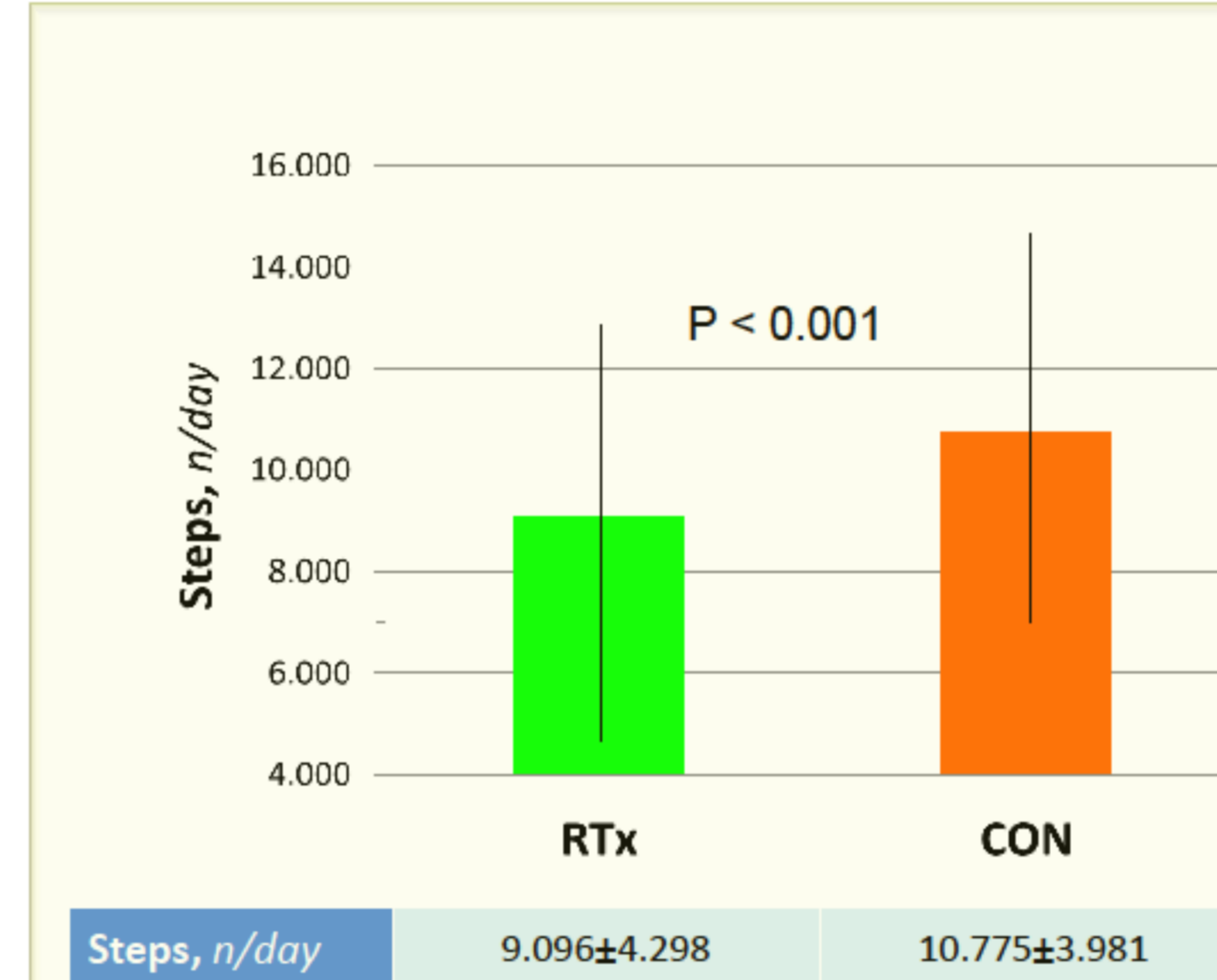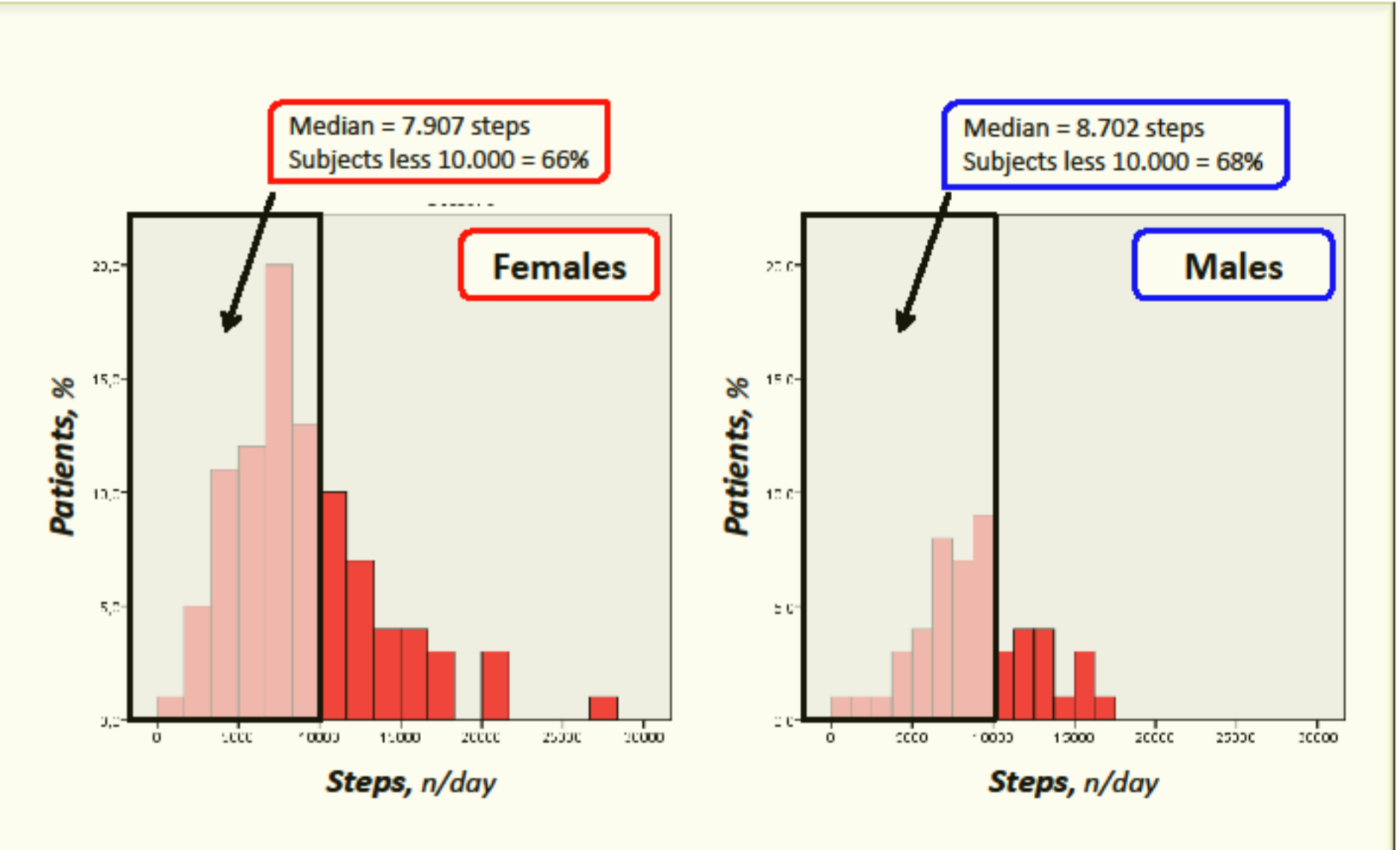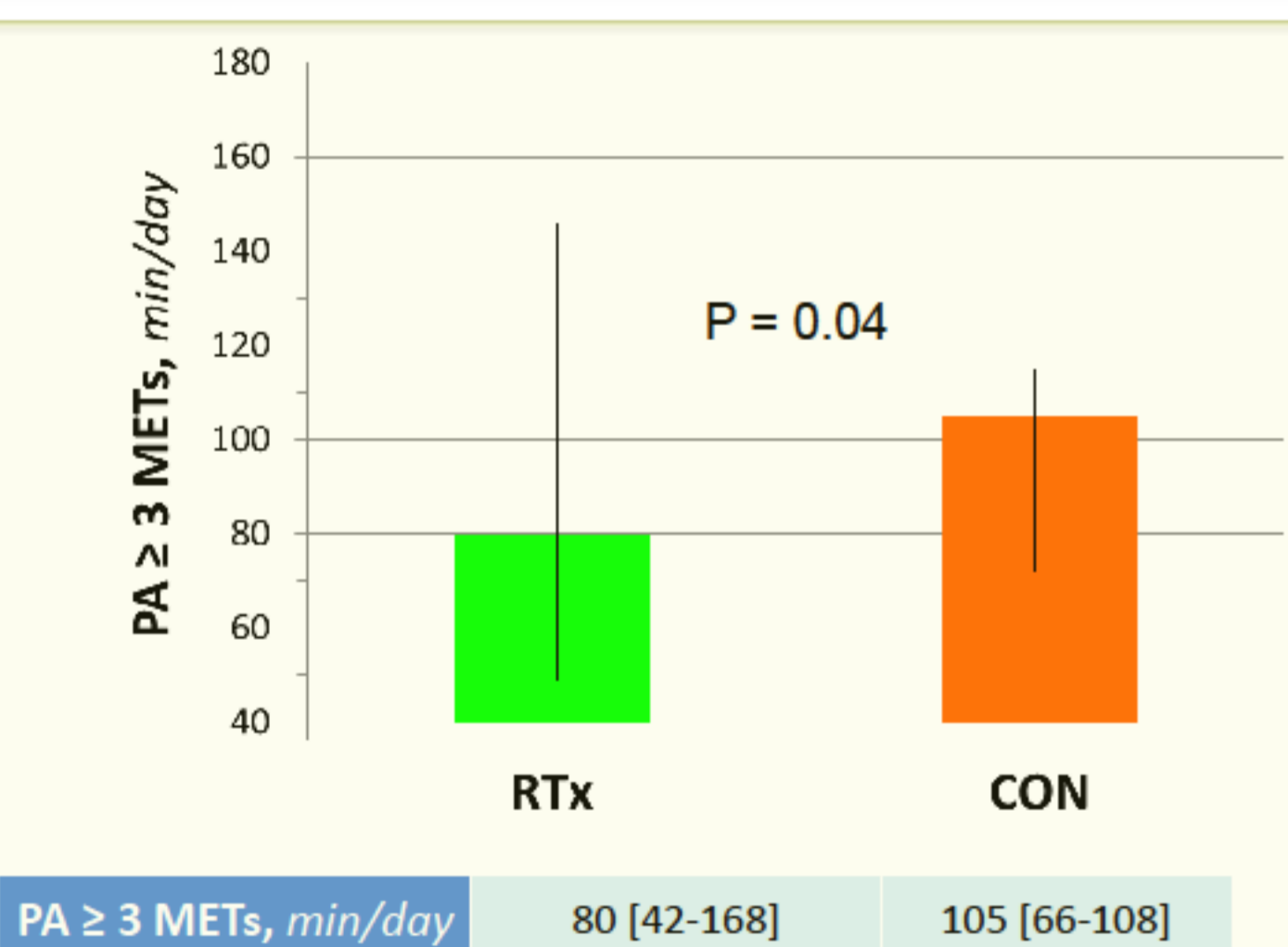
PA Linear Correlations

	steps	PA ≥ 3 METs
Gender	0.10 (ns)	-0.04 (ns)
Age	-0.24 (<0.001)	-0.14 (ns)
RTx-age	-0.12 (<0.01)	-0.03 (ns)
eGFR	0.28 (<0.001)	0.19 (ns)
Weight	-0.24 (<0.001)	0.13 (ns)
BMI	-0.25 (<0.001)	0.08 (ns)
Charlson-CI	-0.18 (<0.05)	-0.14 (ns)
Barthel	0.29 (<0.001)	0.26 (<0.01)
Karnowsky	0.39 (<0.001)	0.17 (ns)

PA duration *vs.* Body wt

R = 0,164; p = 0,008
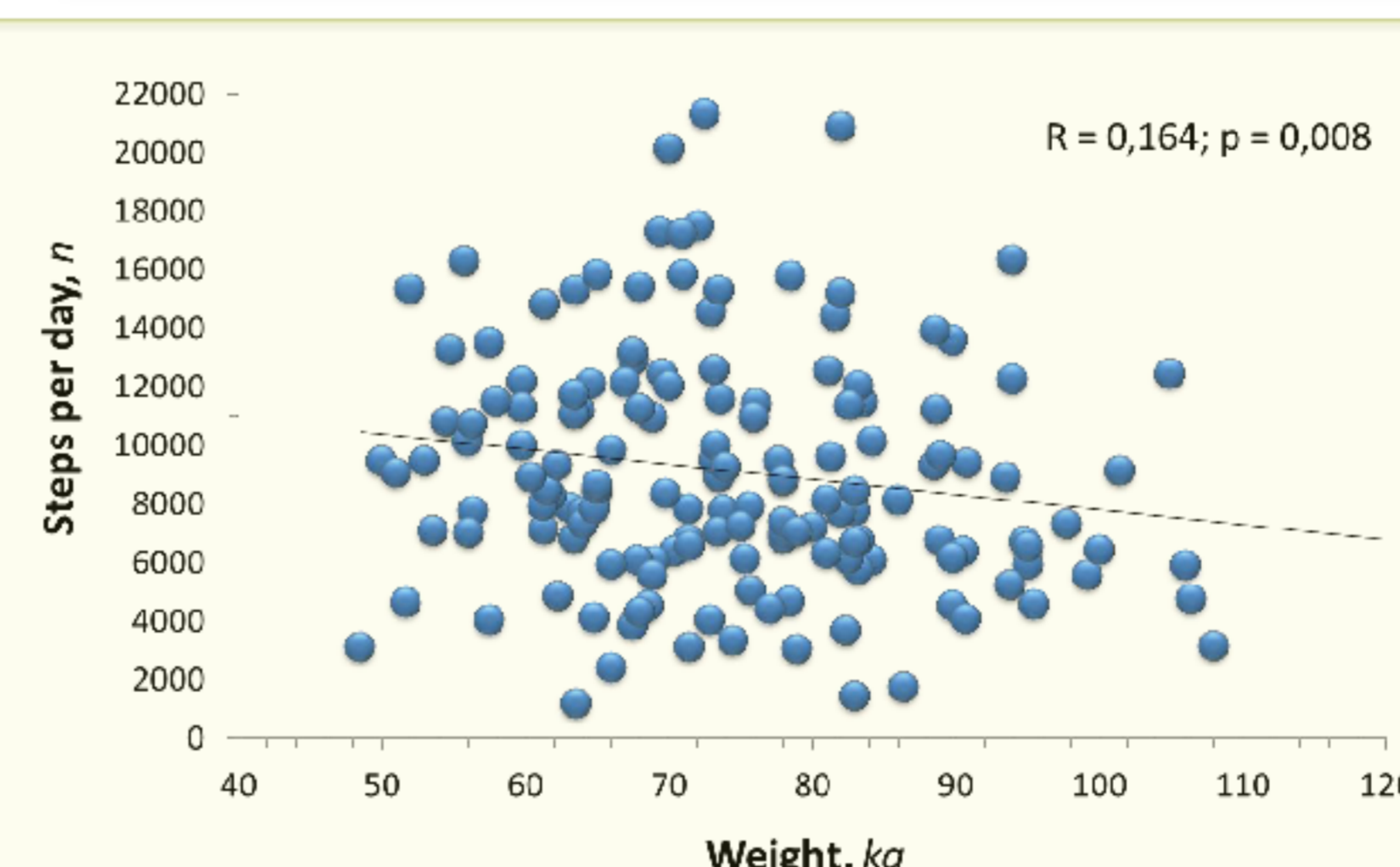
Body Composition

	RTx	CON	p
Weight, *kg*	74.0±14.5 *(-)	76.7±17.4	0.14
BMI, *kg/m²*	27.1±4.9 *(-)	27.5±5.4	0.52
Waist Circumf., *cm*	98±15 *(-)	94±15	0.009
Hip Circumf., *cm*	101±14	103±11	0.075
W/H ratio	0.96±0.10	0.91±0.08	<0.001
FM (arm), *cm2*	27 [21-34]	30 [22-39]	0.08
FM (BIA), *kg*	20 [14-25] *(-)	21 [15-29]	0.02
FFM (arm), *cm2*	44 [37-54] *(-)	42 [31-52]	0.06
FFM (BIA), *kg*	54±10	53±11	0.63
Hand grip, *kg*	31±11	32±11	0.42

* = p <0.05 *vs.* PA duration (steps); (-) = inverse correlation

Nutrient Intakes

	RTx	CON	p
Energy, *kcal/day*	1903±426 *(+)	1861±447	0.40
kcal/kg/day	25.5±7.2	25.3±7.7	0.70
Lipids, *% energy*	32.3 [28.7-35.5]	31.6 [27.3-35.6]	0.22
Carbohydrates, *% energy*	51.6 [46.8-54.5]	51.0 [46.2-55.4]	0.39
Proteins, *% energy*	15.4 [13.8-17.1]	15.7 [14.1-17.9]	0.12
g/day	73±18	74±19	0.64
g/kg/day	1.0±0.3	1.0±0.3	0.14
Proteins, *g/day*	76 [65-93]		---
(urine 24-h) *g/kg/day*	1.05 [0.90-1.29]		---
Salt (urine 24-h), *g/day*	10.5±4.1		---
Salt, *g/day*	3.2 [2.0-4.4]	4.1 [3.2-5.5]	<0.01
Phosphorus (urine 24-h, *mg/day*	970±392		---
Phosphorus, *mg/day*	1024 [856-1191]	1068 [870-1200]	0.32
Calcium, *mg/day*	259±72	246±70	0.14
Acids, *mEq/day*	19.6 [6.9-29.5]	9.8 [0.33-18.9]	<0.001
Fibers, *g/day*	13.4 [8.1-18.5]	17.5 [13.6-22.6]	<0.001

Lifestyle & Renal Transplant

 # Lifestyle (KDIGO 2012)

3.1.21:

Physical Activity 66 % pts are under the safe threshold

Healthy Weight 66 % pts are above the safe threshold of BMI (25)
- abnormal body fat distribution
- high sodium and phosphorus intake
- low fiber intake

Smoking 18% pts stopped but 15% pts still smoke

Conclusions

● In stable renal transplanted patients (RTx) the physical activity (PA) is reduced, in either duration or intensity and 2/3 pts are below the suggested levels

● Low PA in RTx is related to age, transplant duration, comorbidities, GFR and functional status

● The major modifiable determinant of reduced PA in RTx is the increased body weight, but 2/3 pts are over 25 of BMI and 1/5 pts is obese

● Half of smokers RTx pts did not stopped to smoke

● Body fat distribution in RTx is changed and this may be associated with lower PA, rather than different nutrients intake