



MP03-04:

IMPACT OF INSULIN RESISTANCE AND PHYSICAL ACTIVITY ON KIDNEY STONE FORMATION IN THE JAPANESE POPULATION: A PROSPECTIVE COHORT STUDY

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Study design & participants

- 4,007 (2,084 men and 1,923 women) participants who were free of kidney stone and diabetes at baseline.
- A total of 97 men (4.7%) and 45 women (2.3%) developed kidney stones at 5 years after baseline.

Definition of insulin resistance (IR)

n=4,007		Fasting insulin level ($\mu\text{U}/\text{mL}$)	
		< 15.0	≥ 15.0
HOMA-IR	< 2.5	Control	none
		n=3,690 (1,878 men, 1,812 women)	
	≥ 2.5	Moderate-IR	Severe-IR
		n=249 (158 men, 91 women)	n=68 (48 men, 20 women)

Homeostasis model assessment of insulin resistance (HOMA-IR) = fasting insulin ($\mu\text{U}/\text{mL}$) \times fasting glucose (mmol/L) / 22.5



- ❑ In Japanese men, severe insulin resistance was associated with kidney stone formation under the normoglycemic condition.
- ❑ Avoiding sedentary lifestyles could prevent kidney stone formation through improving insulin resistance.

Crude and multivariate adjusted odds ratio (OR) for kidney stone development within control, moderate and severe insulin resistance (IR) groups

Men (n=2,084)	Control	Moderate-IR	Severe-IR	p value
No. pts	1,878	158	48	
Kidney stone development, n (%)	87 (4.6)	5 (3.2)	5 (10.4)	
Multivariate adjusted [†] OR (95% CI)	1.00	0.76 (0.29-1.96)	2.91 (1.02-8.25)	< 0.05

† Adjusted for age, BMI, waist circumference and systolic blood pressure.

Physical activity (walking and sedentary times)

Men (n=2,084)	Control	Moderate-IR	Severe-IR	p value
No. pts	1,878	158	48	
Walking time (hours/day), n (%)				0.01
2 or greater	636 (33.9)	37 (23.4)	13 (27.1)	
1 or less	1,242 (66.1)	121 (76.6)	35 (72.9)	
Sedentary time (hours/day)				< .0001
6 or less	1,105 (58.8)	81 (51.3)	15 (31.3)	
7 or greater	773 (41.2)	77 (48.7)	33 (68.7)	