Supplementary

Table S1 Previous human studies on the association between serum uric acid and testosterone.

Study	N	Population	Main results
Chao Liu *et al.* (18)	205	Male patients with T2DM	SUA was negatively associated with testosterone.
Akishita *et al.* (19)	172	Male office-workers aged 40-64 years	Linear regression analysis showed a negative association between serum testosterone and SUA
Gambineri *et al.* (20)	15	Male participants with abdominal obesity and OSAS	A negative correlation between testosterone and SUA and a positive correlation between testosterone and HDL-cholesterol level.
Krysiak *et al.* (21)	51	Male patients with T2DM and late-onset hypogonadism	Compared with metformin-treated patients, testosterone-metformin combination therapy reduced SUA levels.
Yingli Lu *et al.* (22)	4,426	Men and postmenopausal women with diabetes	In men patients, serum testosterone was negatively associated with SUA levels and SUA levels decreased with the increased testosterone quartiles.
Krysiak *et al.* (23)	31	Male late-onset hypogonadism patients	Testosterone therapy are associated with reduced plasma levels of LDL cholesterol and uric acid.
Yahyaoui *et al.* (24)	69	Healthy transsexual persons, 22 MFTs and 47 FMTs	In FMTs, SUA levels increased significantly after 1 year of testosterone therapy.
Watanabe *et al.* (25)	160	patients with female to male GID	SUA levels elevated after three months of TRT and there was a tendency toward testosterone dose-dependency.
Marcolongo *et al.* (26)	132	72 patients with gout and 60 were normal controls	No significant difference in plasma testosterone levels was found between gout patients and controls.
Weinberger *et al.* (27)	69	38 men with ASH and 31 were healthy controls	The serum testosterone levels were similar in both groups.

SUA, serum uric acid; T2DM, type 2 diabetes mellitus; OSAS, obstructive sleep apnea syndrome; HDL, high-density lipoprotein; LDL, low density lipoprotein; MFTs, male-to-female transsexuals; FMTs, female-to-male transsexuals; GID, gender identity disorder; TRT, testosterone replacement therapy; ASH, asymptomatic hyperuricemia.

Table S2 Univariable and multivariate linear regression analysis predicting log-transformed serum testosterone, NHANES 2015–2016 (N=2,590).

Variable	Univariable linear regression analysis				Multivariable linear regression analysis			
	R^2	B	SE	P value	Adj. R^2	B	SE	P value
Age (years)	0.019	–0.004	0.001	<0.001	0.662	–0.009	0.001	<0.001
Race	0.001	0.018	0.015	0.214		–0.022	0.010	0.031
BMI (kg/m^2)	0.200	–0.032	0.002	<0.001		–0.023	0.002	<0.001
Uric acid (mg/dL)	0.059	–0.091	0.011	<0.001		–0.019	0.008	0.026
ALT (U/L)	0.014	–0.003	0.001	<0.001		–0.001	0.001	0.394
AST (U/L)	<0.001	0.001	0.001	0.831		<0.001	0.001	0.891
Hypertension	0.015	0.124	0.030	<0.001		–0.006	0.022	0.793
Diabetes	0.017	0.191	0.043	<0.001		0.006	0.036	0.861
Hemoglobin (g/dL)	0.033	0.073	0.012	<0.001		0.043	0.009	<0.001
Log (MVPA)	0.002	0.015	0.011	0.180		0.007	0.007	0.327
HOMA-IR	0.065	–0.014	0.002	<0.001		–0.005	0.007	0.014
CRP (mg/L)	0.032	–0.014	0.002	<0.001		–0.003	0.002	0.063
Estradiol (pg/mL)	0.161	0.019	0.001	<0.001		0.016	0.001	<0.001
SHBG (nmol/L)	0.245	0.009	<0.001	<0.001		0.009	<0.001	<0.001

R2, coefficient of determination; B, unstandardized regression coefficient; SE, standard error of the coefficient; Adj. R2, adjusted coefficient of determination; BMI, body mass index; ALT, Alanine aminotransferase; AST, Aspartate aminotransferase; MVPA, moderate-to-vigorous physical activity per week; HOMA-IR, the homeostasis model assessment-insulin resistance index; CRP, C-reactive protein; SHBG, Sex hormone binding globulin.

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