

Testosterone therapy (TTh) prevents progression from prediabetes to type 2 diabetes (T2DM) in hypogonadal: 9-year data from a registry study

F Saad^{1,2}, KS Haider³, A Haider³

¹Global Medical Affairs Andrology, Bayer AG, Berlin, Germany

²Gulf Medical University School of Medicine, Ajman, United Arab Emirates

³Private Urology Practice, Bremerhaven, Germany

Background:

The recommended strategy to prevent progression from prediabetes to T2DM is weight loss.

Method:

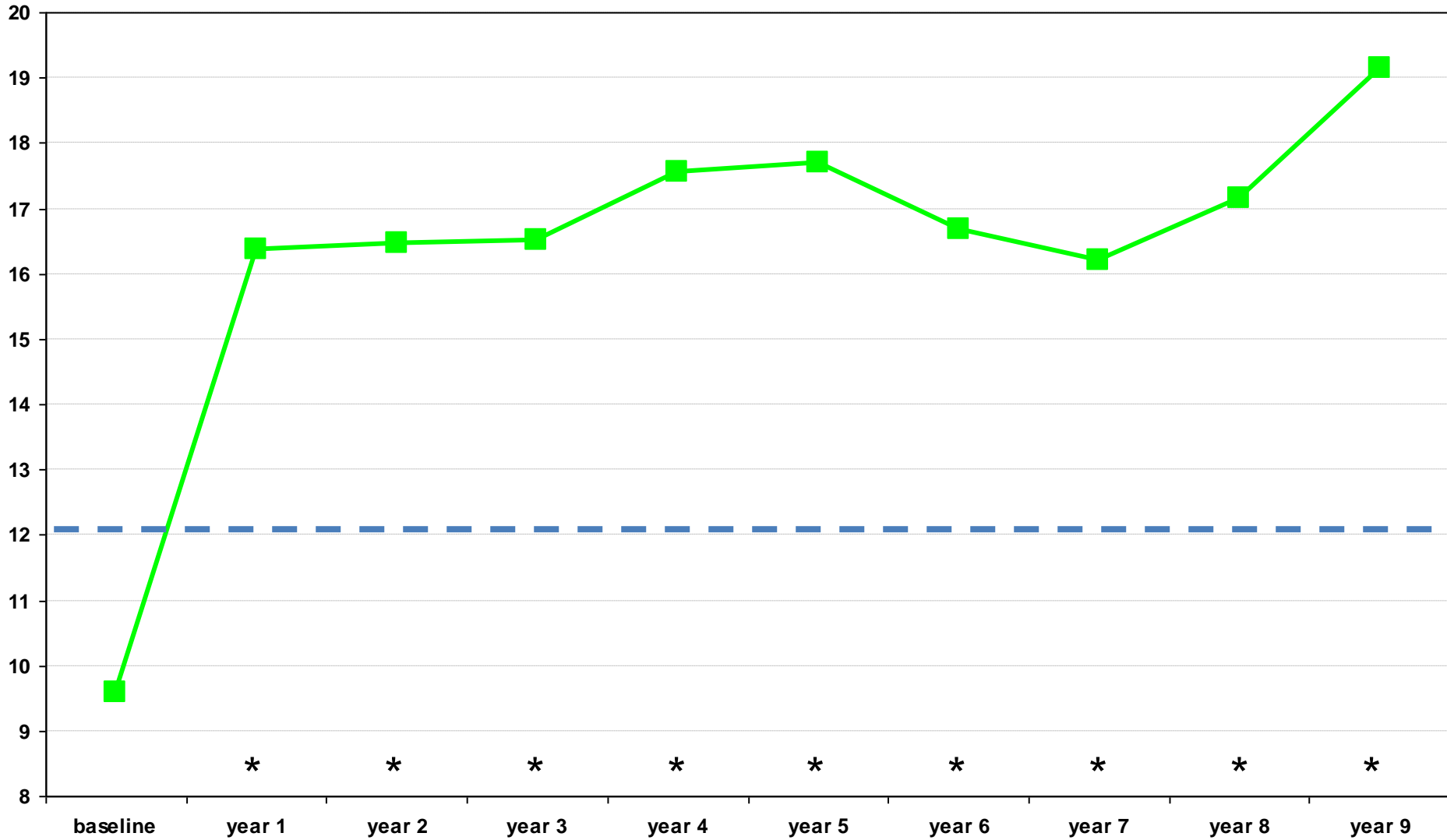
Of 400 men with symptomatic hypogonadism, 45 (11.3%) had prediabetes defined by HbA_{1c} of 5.7-6.4%.

Most men had presented to the urology office with complaints of erectile function or urinary function.

All men received testosterone undecanoate injections (TU) 1000 mg/12 weeks following an initial 6-week interval.

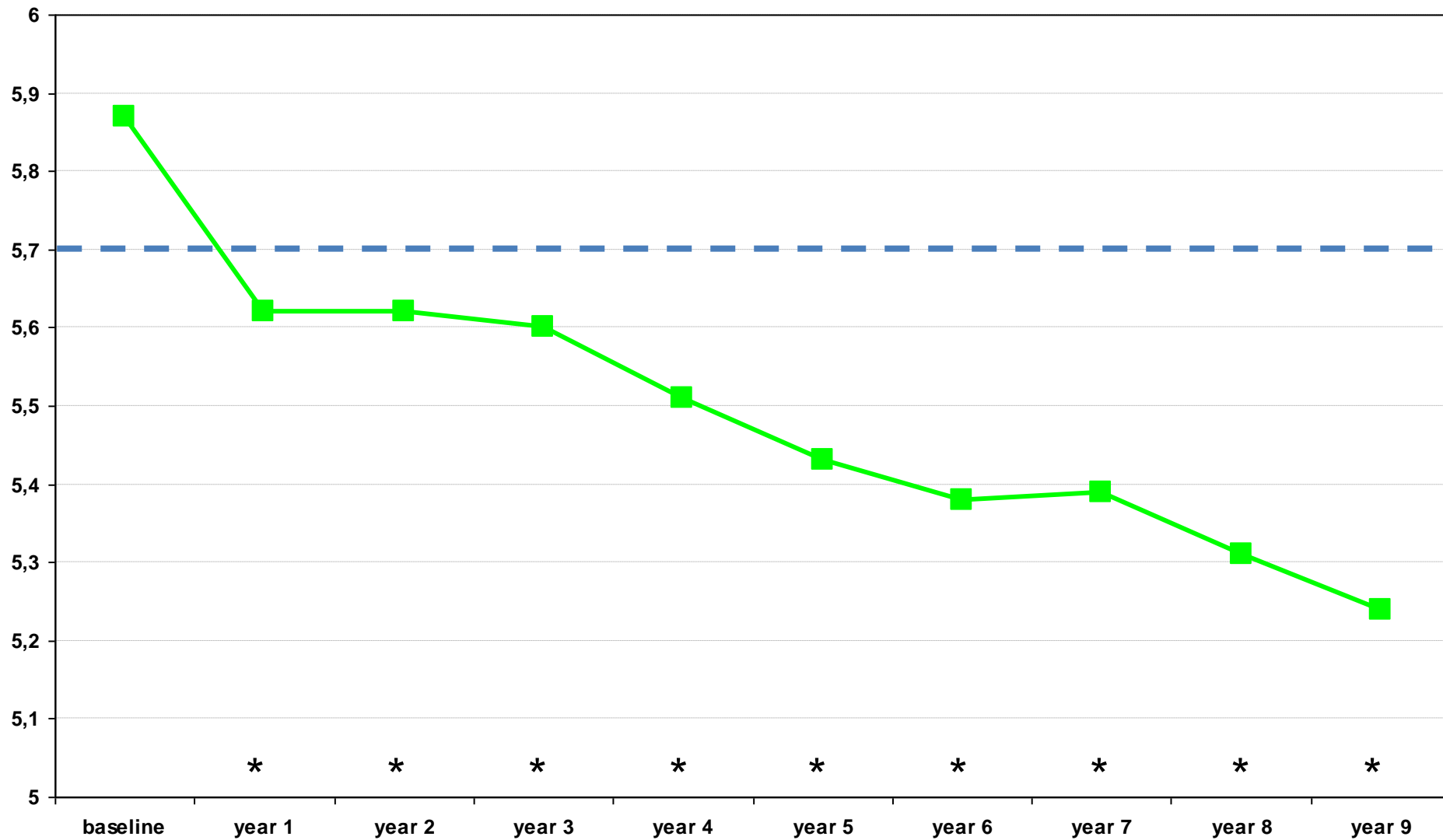
No structured recommendations for lifestyle modifications were provided. Most measurements were performed 2 to 4 times a year for up to 11 years. 9-year data are presented.

Trough total testosterone (nmol/L) in 45 hypogonadal men with prediabetes on long-term treatment with testosterone undecanoate



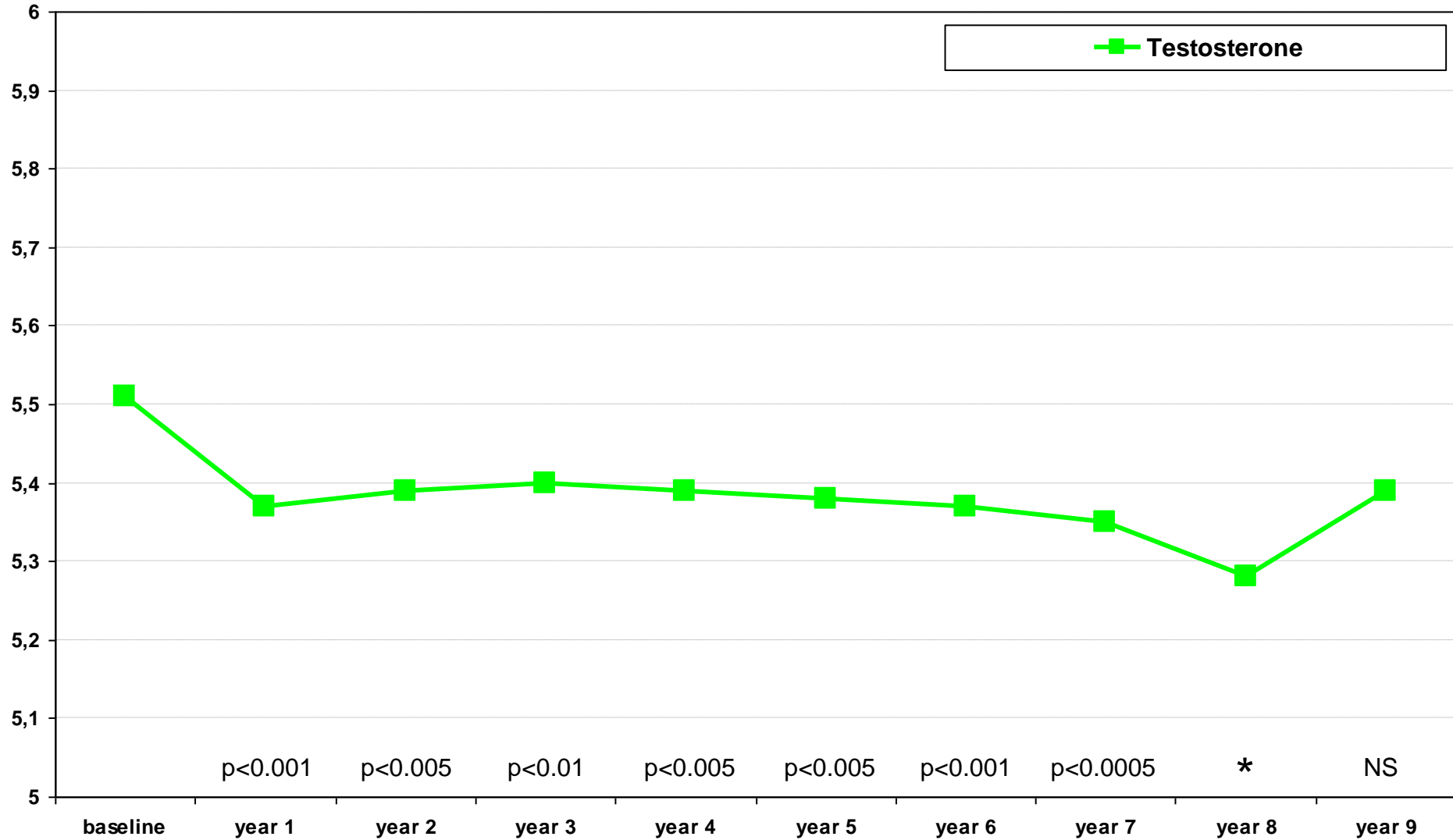
* $p < 0.0001$ vs. baseline

HbA_{1c} (%) in 45 hypogonadal men with prediabetes on long-term treatment with testosterone undecanoate



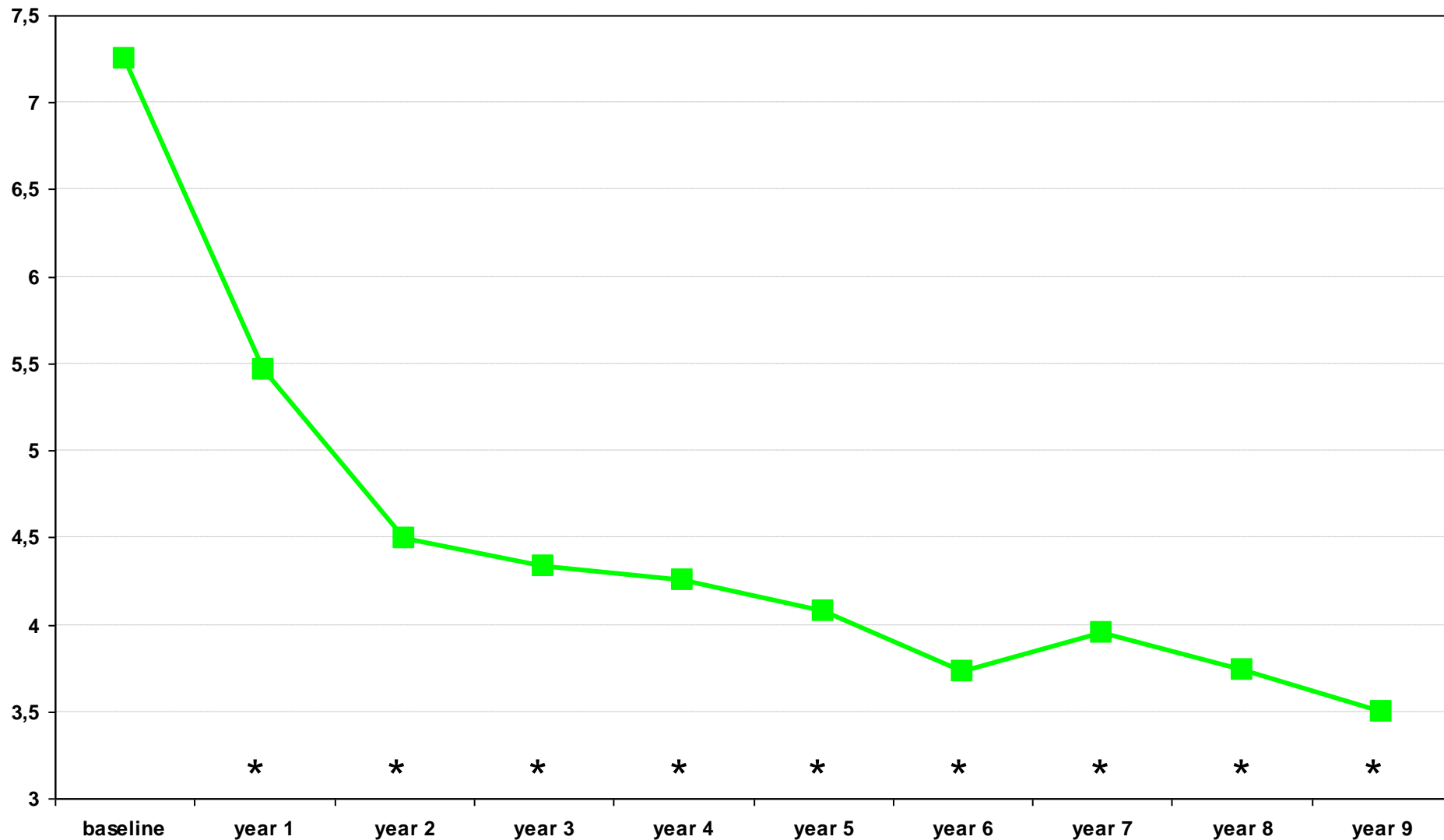
* $p < 0.0001$ vs. baseline

Fasting glucose (mmol/L) in 45 hypogonadal men with prediabetes on long-term treatment with testosterone undecanoate



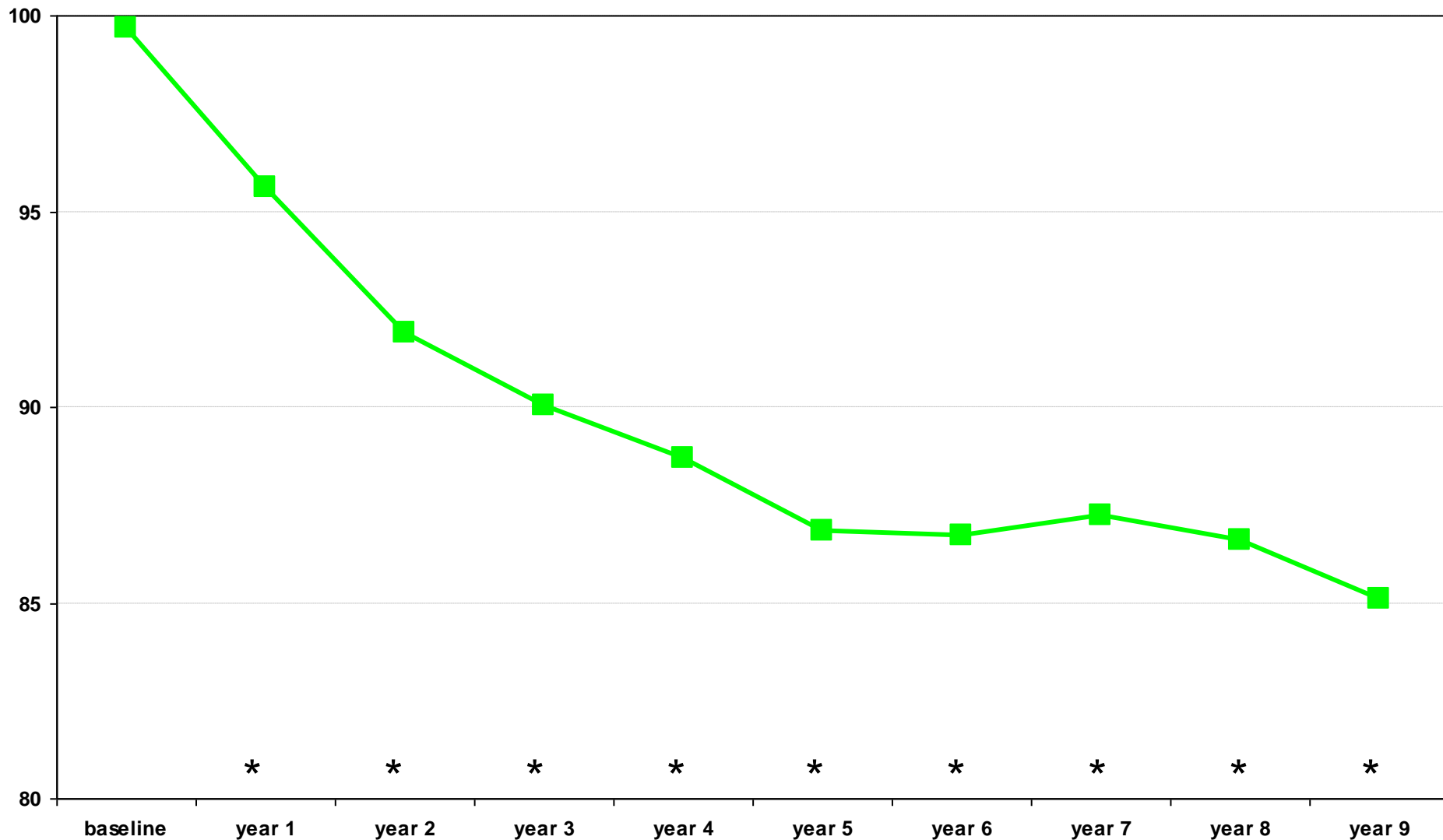
* p<0.0001 vs. baseline; NS=non-significant

Triglyceride:HDL ratio in 45 hypogonadal men with prediabetes on long-term treatment with testosterone undecanoate



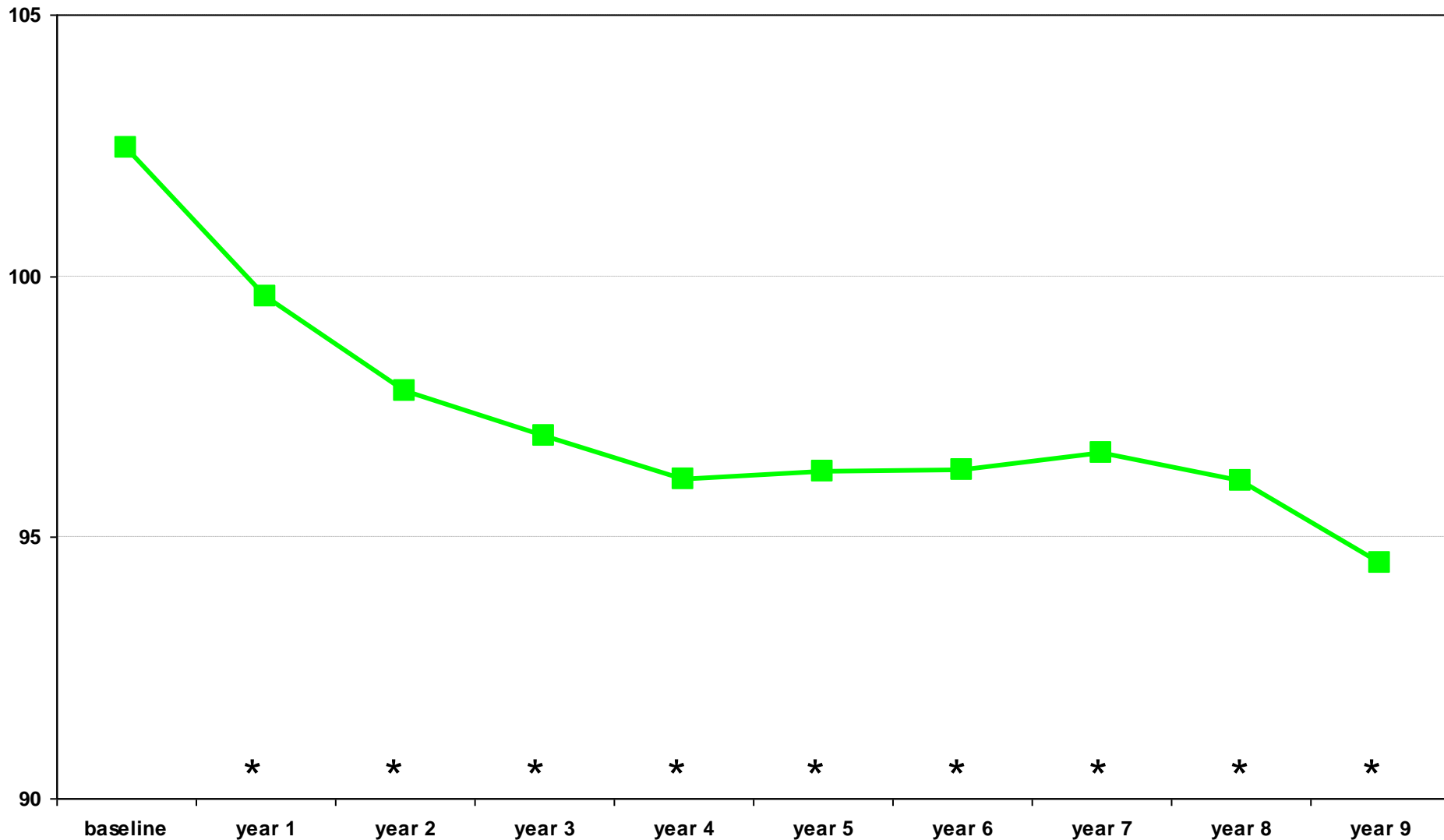
* $p < 0.0001$ vs. baseline

Weight (kg) in 45 hypogonadal men with prediabetes on long-term treatment with testosterone undecanoate



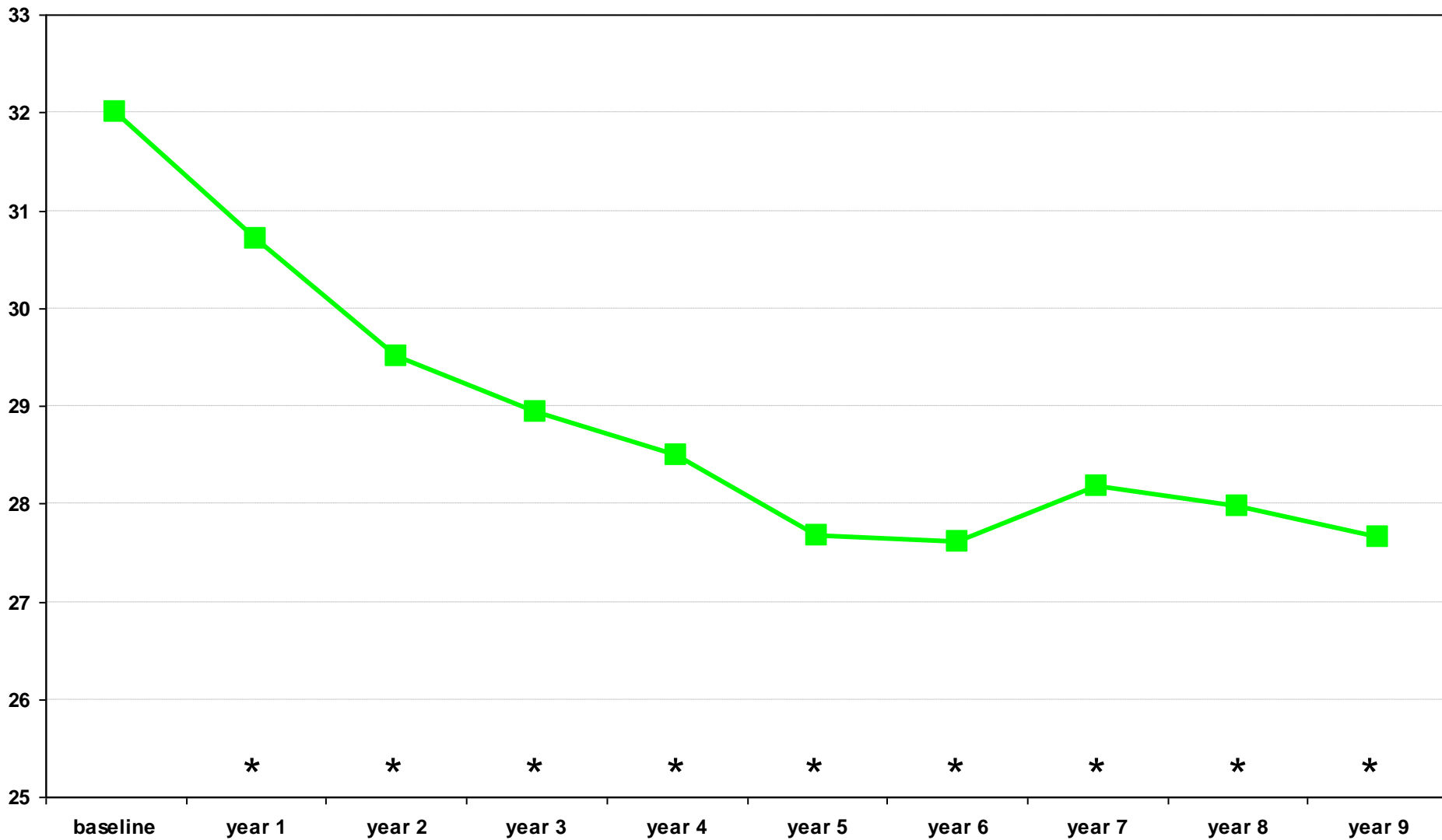
* $p < 0.0001$ vs. baseline

Waist circumference (cm) in 45 hypogonadal men with prediabetes on long-term treatment with testosterone undecanoate



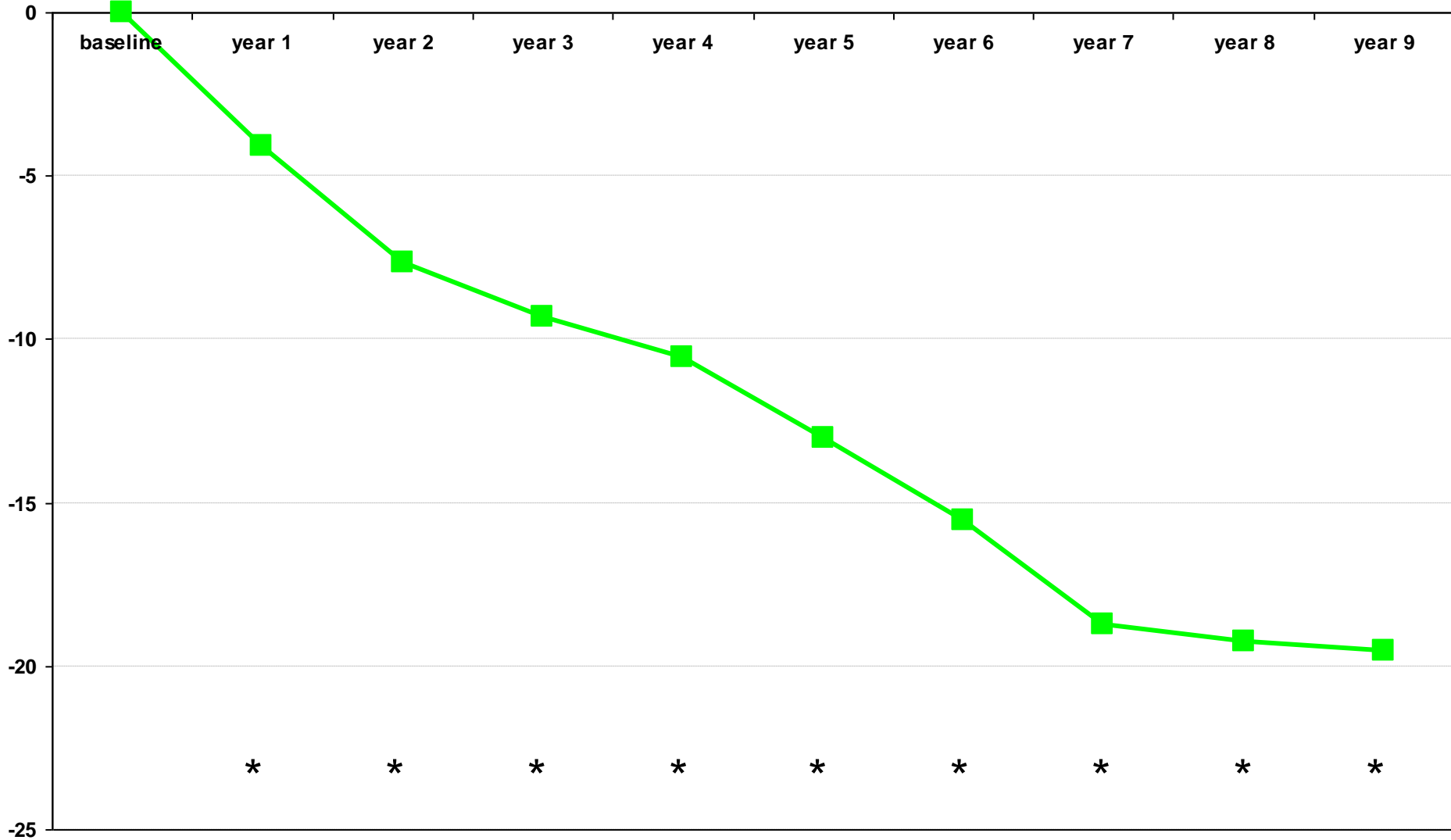
* $p < 0.0001$ vs. baseline

BMI (kg/m²) in 45 hypogonadal men with prediabetes on long-term treatment with testosterone undecanoate



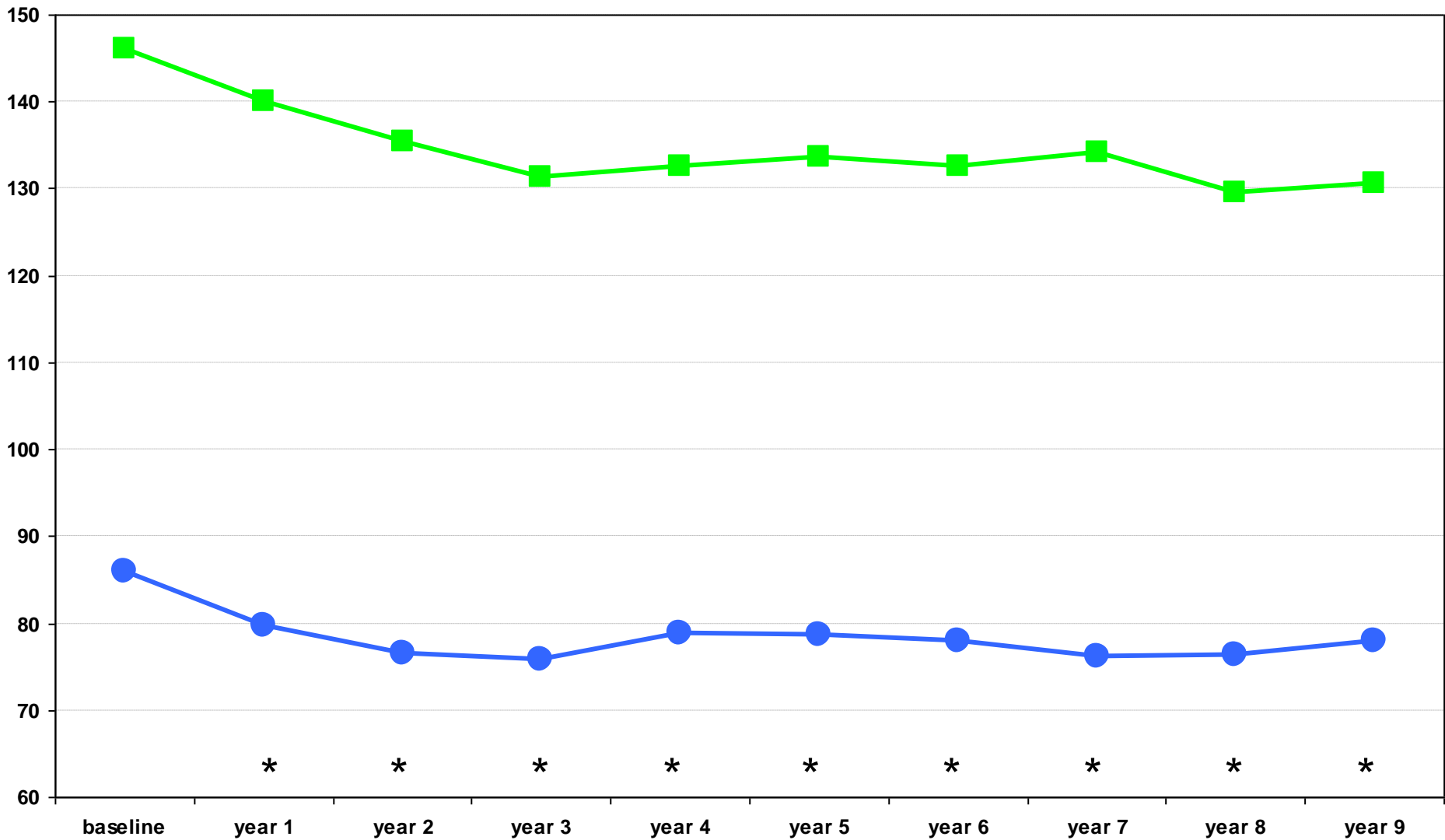
* $p < 0.0001$ vs. baseline

Weight change (%) in 45 hypogonadal men with prediabetes on long-term treatment with testosterone undecanoate



* $p < 0.0001$ vs. baseline

Systolic and diastolic blood pressure (mmHg) in 45 hypogonadal men with prediabetes on long-term treatment with testosterone undecanoate





* $p < 0.0001$ vs. baseline

Prediabetes Nebido HAIDER

12	135	116	84	-32	37,4	27,1	6,3	5,4
30	132	82	76	-6	25,9	24	6,1	5,2
68	132	118	82	-36	39	27,1	6,1	5,2
78	132	128	96	-32	42,8	32,1	6,1	5,5
83	132	88	75	-13	28,1	23,9	5,9	5,4
85	129	98	80	-18	33,1	27	6,1	5,3
87	132	108	81	-27	35,7	26,8	5,9	5,3
88	120	100	90	-10	34,6	31,1	5,8	5,5
108	132	104	84	-20	31,1	25,1	5,7	5
130	126	126	93	-33	39,3	29	6,1	5,2
183	111	108	93	-15	35,7	30,7	6,2	5,4
184	72	92	82	-10	28,7	25,6	6,1	5
189	108	110	85	-25	34,3	26,5	5,7	5,2
190	108	121	86	-35	36,9	26,3	5,7	5,3
219	93	95	82	-13	29,6	25,6	5,7	5
222	93	84	77	-7	27,1	24,9	5,7	5
223	93	102	88	-14	27,4	23,6	5,8	5,4
225	90	85	81	-4	27,1	25,9	5,7	5
233	75	92	90	-2	29,7	29,1	5,9	5,7
257	90	102	93	-9	32,6	29,7	6,1	5,5
261	75	91	84	-7	27,5	25,4	5,7	5,4
265	75	102	86	-16	33,7	28,4	5,9	5,2
270	75	78	73	-5	24,9	23,3	5,7	5,4
274	72	82	76	-6	27,4	25,4	5,7	5,2
277	72	97	83	-14	30,3	25,9	5,7	4,9
295	69	107	95	-12	33,8	30	5,7	5,1
296	69	82	78	-4	27,7	26,4	5,7	4,9
303	69	73	72	-1	23,8	23,5	5,8	5,2
304	69	77	73	-4	24,3	23	5,7	5,1
305	69	75	72	-3	24,5	23,5	5,8	5,2
307	66	79	74	-5	25,5	23,9	5,9	5,3
310	66	78	72	-6	25,2	23,2	5,8	5,4
312	69	103	91	-12	32,9	29	5,8	5,2
314	69	111	94	-17	36,7	31	5,7	5,2
315	66	109	96	-13	34	30	5,9	5,3
330	69	103	90	-13	34	29,7	5,9	5
331	69	102	91	-10	32,6	29	5,7	5,1
332	66	110	95	-15	35,9	31	6,1	5,1
333	66	108	95	-13	36,1	31,7	5,9	5
334	63	109	96	-13	35,2	31	5,8	5,1
335	63	111	97	-14	35	30,6	6,1	5
336	63	107	94	-13	33,4	29,3	5,8	5,1
337	63	114	99	-15	38,1	33,1	6,1	5,1
338	63	108	94	-14	34,5	30	5,7	5
339	66	110	96	-13	37,6	32,8	5,9	5

Individual patients:
No progression from prediabetes to T2DM

 HbA_{1c} < 5.7% (cut-off for prediabetes)
 HbA_{1c} ≥ 5.7% and < 6.5% (cut-off for diabetes)

Conclusions

Long-term TTh with TU in hypogonadal men with prediabetes completely prevented progression from prediabetes to type 2 diabetes.

This effect may have been mediated by weight loss which was demonstrated by sustained reductions in weight and waist circumference.

In addition, it is known that testosterone increases lean body mass and reduces fat mass, changes in body composition which are beneficial over and beyond weight loss alone.