

	Total population (n=84)	“high“ specific activity group (n=42)	“low” specific activity group (n=42)	<i>P</i> value *
Median (interquartile range) age in years	71.5 (64–77.5)	69.5 (63–77)	72 (65–78)	<i>P</i> = 0.3183
Median (interquartile range) ISUP grade	3 (2–5)	3 (2–4)	3 (2–5)	<i>P</i> = 0.3540
Median (interquartile range) PSA at timepoint of scan (ng/mL)	2.67 (0.55–11.42)	2.40 (0.55–9.13)	3.99 (0.53–14.80)	<i>P</i> = 0.2138
ADT in the 6 months prior to PET/CT	35/84 (41.7%)	19/42 (45.2%)	16/42 (38.1%)	<i>P</i> = 0.6580
Indication for PET/CT				<i>P</i> = 0.4227
Primary staging	18 (21.4%)	9 (21.4%)	9 (21.4%)	
Restaging of biochemical recurrence	45 (53.6%)	20 (47.6%)	25 (59.5%)	
Metastasized prostate cancer	21 (25.0%)	13 (31.0%)	8 (19.0%)	
Median (interquartile range) injected activity per bodyweight (MBq/kg)	4.0 (3.9–4.0)	4.0 (3.9–4.0)	4.0 (3.9–4.0)	<i>P</i> = 0.6176
Median (interquartile range) ¹⁸ F-rhPSMA- 7.3 uptake time (minutes)	71 (66–79)	70 (65–76)	75 (68–87)	<i>P</i> = 0.0602
Median (interquartile range) specific activity (MBq/μg)	81.4 (19.3–178.9)	178.9 (158.6–199.1)	19.3 (17.7–22.5)	<i>P</i> < 0.0001

Supplemental Table 1 Patient characteristics stratified by “high” vs. “low” specific activity group. Clinical and PET parameters were matched for both groups. median specific activity at time point of injection was different by a factor of 10 (*P*<0.0001).

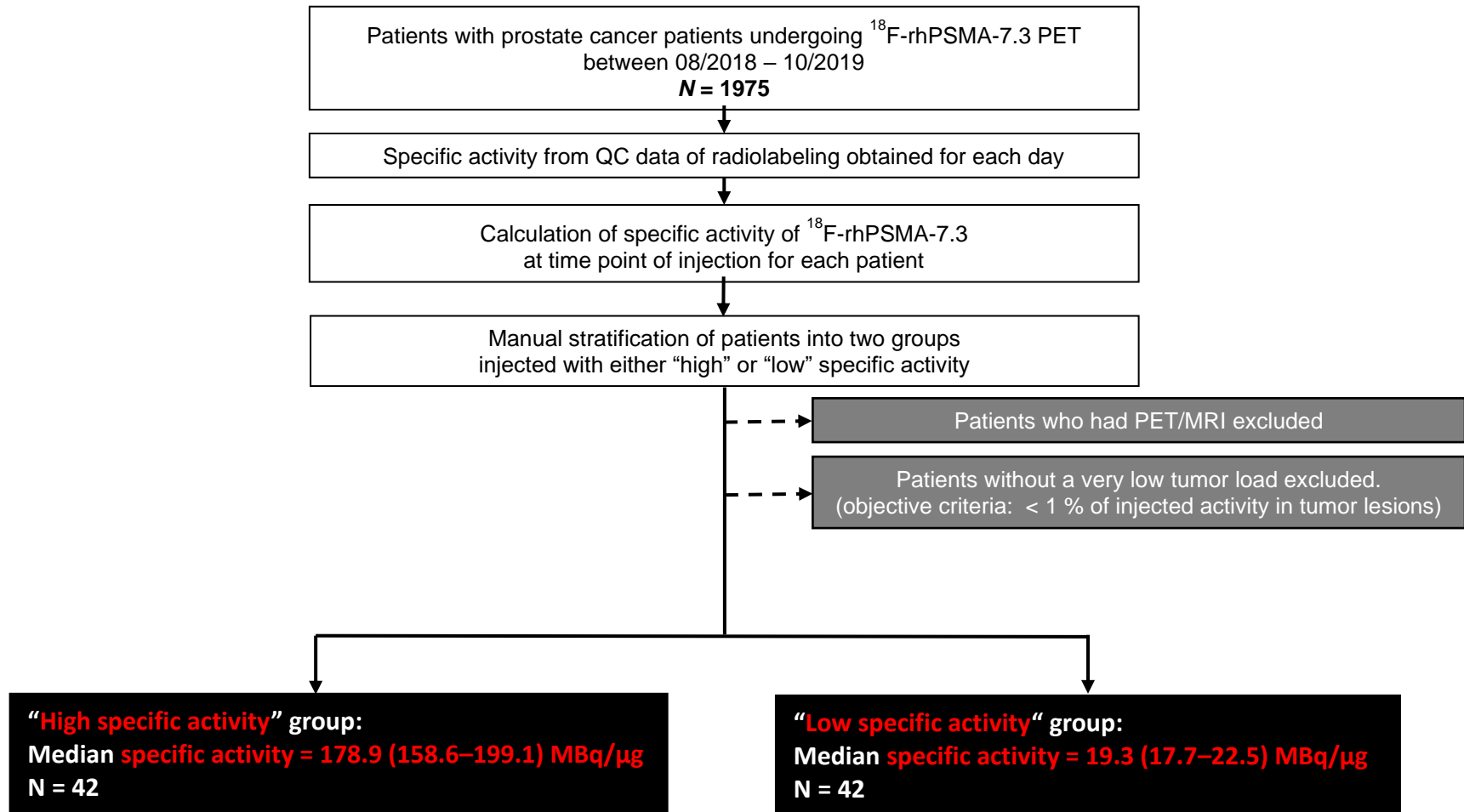
ADT. androgen deprivation therapy; ISUP. International Society of Urological Pathology; PET/CT. positron emission tomography/computed tomography; PSA. prostate specific antigen. * *Mann-Whitney U test*

	Patients injected with	
	"high" specific activity	"low" specific activity
Specific activity at calibration [MBq/μg] median (IQR)	281.3 (247.1-346.6)	197.8 (181.6-237.8)
Time between calibration and injection [min] median (IQR)	72 (54-89)	367 (342-397)
Specific activity at injection [MBq/μg] median (IQR)	178.9 (158.6–199.1)	19.3 (17.7–22.5)
Proportion of ¹⁸F-labelled rhPSMA-7.3 [%] * median (IQR)	0.69 (0.60-0.84)	0.48 (0.44-0.58)
injected mass [μg] median (IQR)	1.75 (1.61-1.83)	17.43 (15.27-19.96)

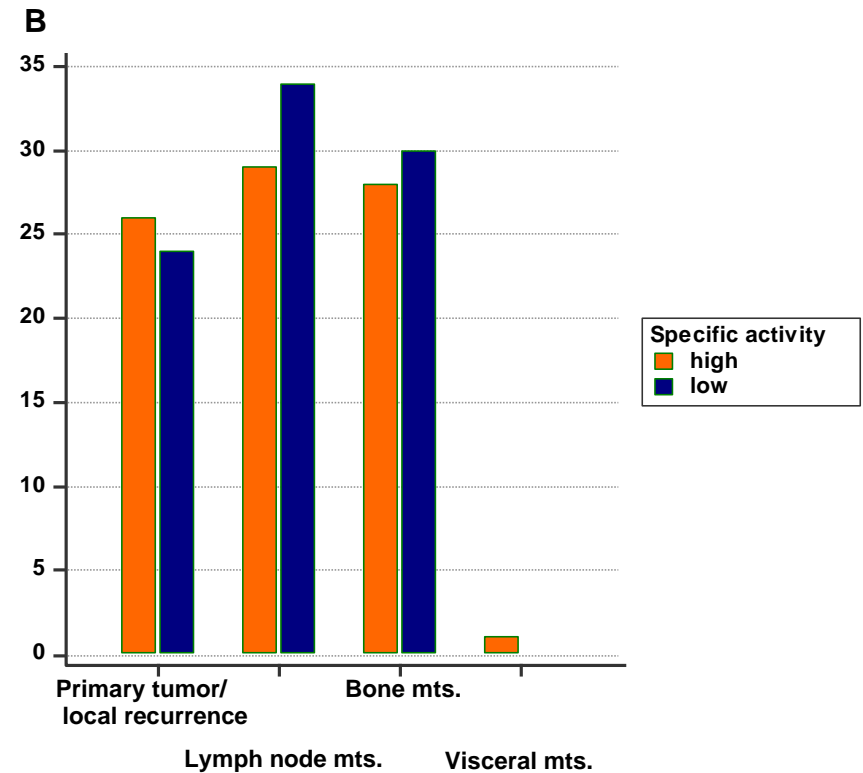
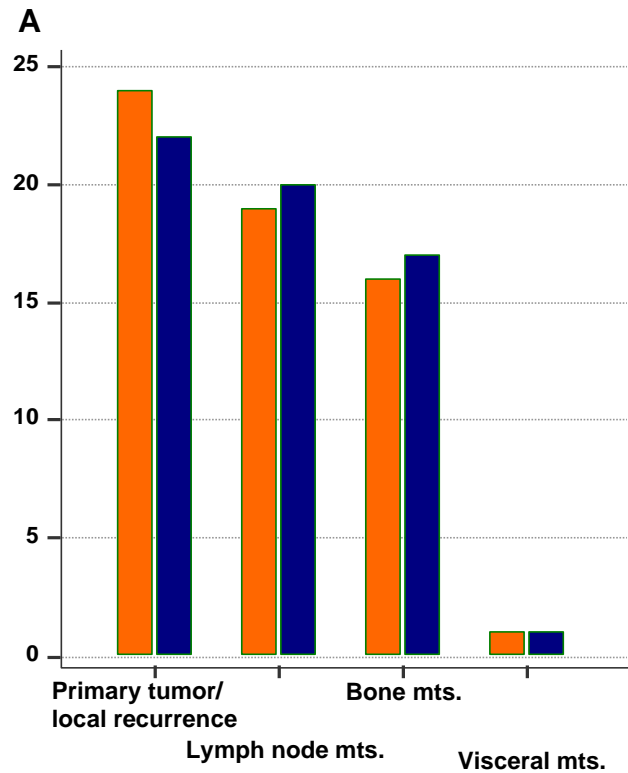
Supplemental Table 2 Data for specific activity at calibration, time between calibration and patient injection, specific activity at injection and injected mass for the “high” and “low” specific activity group.

Organ	“high“ specific activity Median SUV_{mean} (interquartile range)	“low” specific activity Median SUV_{mean} (interquartile range)	<i>P</i>
Parotid glands	19.2 (17.2–22.4)	16.7 (14.4–20.5)	<i>P</i> =0.0142
Submandibular glands	22.3 (18.0–26.7)	18.1 (15.2–20.6)	<i>P</i> =0.0017
Bloodpool	2.0 (1.8–2.3)	2.2 (1.9–2.4)	<i>P</i> =0.1591
Liver	7.2 (6.1–8.7)	7.1 (6.2–8.2)	<i>P</i> =0.9929
Spleen	9.6 (7.7–12.2)	7.8 (5.7–10.0)	<i>P</i> =0.0115
Kidneys	34.5 (28.1–41.3)	34.2 (28.1–39.7)	<i>P</i> =0.8650
Bone	1.4 (1.1–1.6)	1.5 (1.1–1.8)	<i>P</i> =0.2128
Muscle	0.8 (0.7–0.8)	0.8 (0.7–0.9)	<i>P</i> =0.7051
Tumor	9.0 (4.4–14.8)	9.5 (6.5–19.0)	<i>P</i> =0.2734

Supplemental Table 3 ¹⁸F-rhPSMA-7.3 SUV_{mean} stratified by ¹⁸F-rhPSMA-7.3 specific activity (volume of interest analysis)



Supplemental Figure 1 Study flow chart



Supplemental Figure 2 Number and localization of the analyzed tumor lesion compared for both groups. No statistical difference of the lesion distribution was present between the “high” and “low” specific activity group. A: type and number of tumor sites involved in the patient cohorts
 B: types and number of tumor lesions included in the quantitative SUV-based analysis. Mts. = metastases.