



Free Testosterone Predicts Preoperative Sexual Function in Men Over 60 years of Age with Prostate Cancer

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1. Introduction & Objectives

2. Methods

- The inverse relationship between sexual function and aging is assumed to exist in all men in all life stages via modulation of total testosterone (TT) due to increasing levels of sex hormone binding globulin (SHBG).
- Our group previously reported this effect only to exist in older men (≥ 60 years of age) and when utilizing calculated free testosterone (cFT).
- The present study seeks to further delineate whether this effect is consistent with or independent of differences seen in younger and older men with PCa.**

- From 2009-19, 783 men with PCa underwent robot-assisted radical prostatectomy (RARP).
- Patients had prospectively drawn total testosterone (TT) and sex hormone binding globulin (SHBG); free testosterone was calculated via a previously validated calculator.
- Patients were stratified by age (< 60 or ≥ 60 years) and covariates of age, cFT, and sexual function were identified.
- Impact of cFT on sexual function was assessed via logistic regression models, after adjusting for significant covariates.**

Table 1. Clinical Demographics

- Men ≥ 60 years of age had significantly higher serum prostate specific antigen (PSA) and prostate weight, but lower cFT.
- A higher proportion of these men also had high-risk (GGG 9-10) and high-volume (p-stage T3/T4) disease.

	< 60 years n=260	≥ 60 years n=523	p-value
	Mean (SD)	Mean (SD)	
Age (years)	55.0 (4.1)	67.4 (4.8)	<0.001
PSA (ng/dL)	6.9 (5.0)	8.9 (11.5)	0.001
IIEF-5	21.8 (5.2)	17.9 (7.4)	<0.001
BMI (kg/m ²)	27.1 (3.2)	27.0 (3.5)	0.664
Prostate Volume (mL)	46.8 (14.4)	56.7 (22.1)	<0.001
TT (ng/dL)	375.8 (147.4)	379.5 (159.5)	0.753
SHBG (nmol/L)	40.8 (18.4)	50.8 (22.3)	<0.001
FT (ng/dL)	6.9 (3.0)	5.9 (2.4)	<0.001
	N (%)	N (%)	p-value
Nerve Sparing			<0.001
Bilateral	232 (89)	404 (77)	
Unilateral	25 (10)	75 (14)	
None	3 (1)	44 (8)	
Gleason Grade Group			<0.001
1	60 (23)	72 (14)	
2	115 (44)	195 (37)	
3	51 (20)	134 (26)	
4	14 (5)	39 (7)	
5	20 (8)	83 (16)	
Pathologic Stage			<0.001
pT2	185 (71)	298 (57)	
pT3/T4	75 (29)	225 (43)	

Figure 1a. <60 years of age

Figure 1a. IIEF-5 and cFT in men <60 years of age

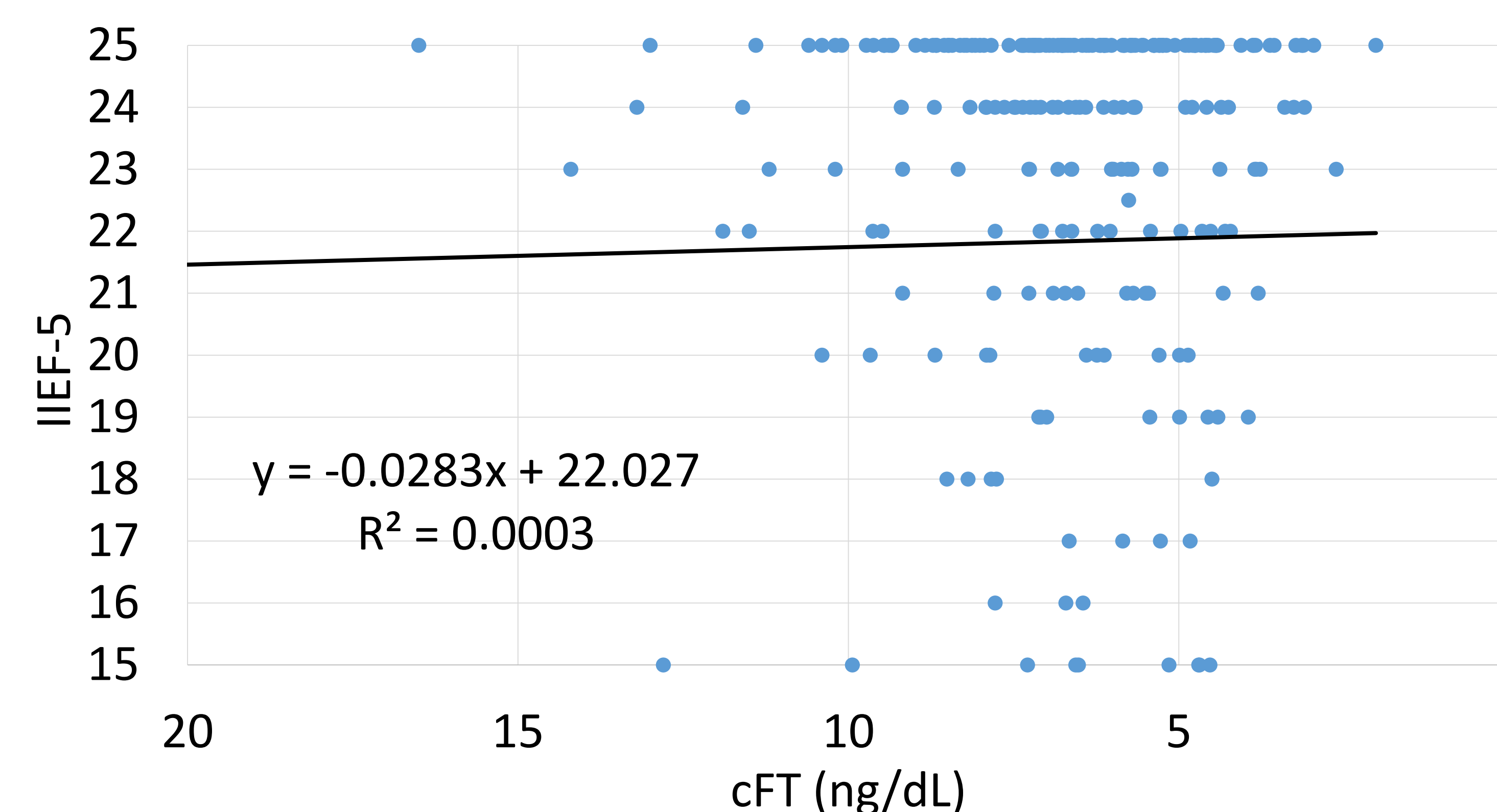


Table 1a. Factors predicting IIEF-5 in men <60 years of age

	B	Std. Error	Beta	t	Sig.
Constant	21.860	1.337		16.348	<0.0001
cFT (cont.)	-0.057	0.111	-0.033	-0.514	0.608
PSA (cont.)	0.066	0.071	0.064	0.933	0.352
Prostate Weight (cont.)	0.006	0.023	0.016	0.253	0.800
pGS [1-4 (ref) vs. 5]	-0.628	1.265	-0.033	-0.497	0.620
p-stage [2 (ref) vs. 3/4]	-1.120	0.762	-0.099	-1.469	0.143

Figure 1b. ≥ 60 years of age

Figure 1b. IIEF-5 and cFT in men ≥ 60 years of age

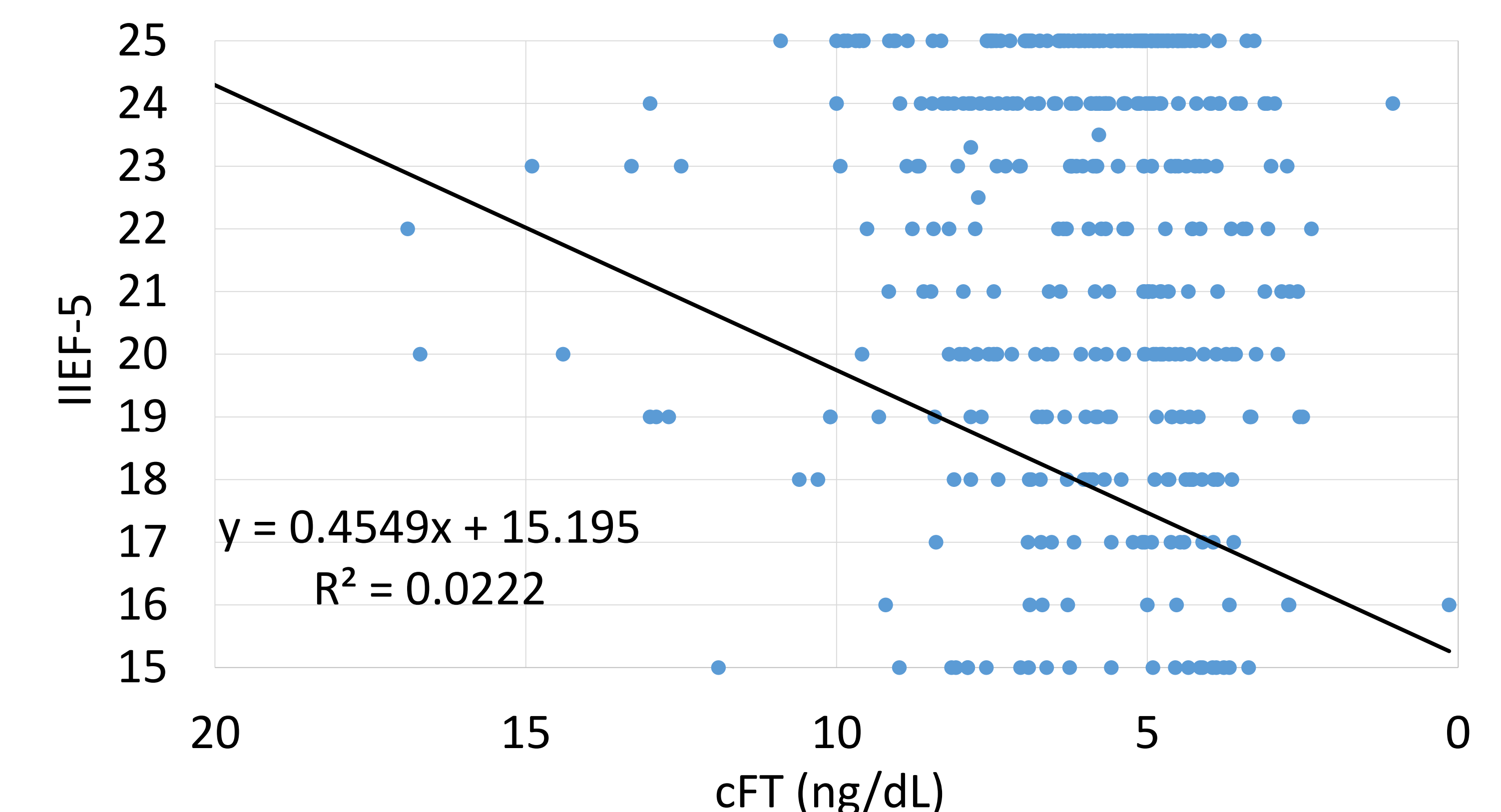


Table 1b. Factors predicting IIEF-5 in men ≥ 60 years of age

	B	Std. Error	Beta	t	Sig.
Constant	17.697	1.296		13.658	<0.0001
cFT (cont.)	0.428	0.134	0.140	3.201	0.001
PSA (cont.)	0.043	0.029	0.066	1.479	0.140
Prostate Weight (cont.)	-0.037	0.015	-0.110	-2.501	0.013
pGS [1-4 (ref) vs. 5]	-1.085	0.950	-0.053	-1.143	0.254
p-stage [2 (ref) vs. 3/4]	-0.984	0.697	-0.065	-1.411	0.159

After adjusting for these covariates, cFT was an independent predictor of IIEF-5 scores only for men ≥ 60 years ($p=0.001$, OR: 0.140, 95% CI: 0.165 – 0.690), along with prostate weight ($p=0.013$, OR: -0.110, 95% CI: -0.066 – -0.008).

4. Conclusions

- cFT is an independent predictor of sexual function in men with PCa only in men greater than 60 years of age.
- This highlights the especially deleterious effects of low cFT in older patients compared to their younger counterparts.
- Testosterone replacement therapy may have restorative benefits for older patients suffering from low cFT levels.