

Table S1. Demographic and clinical characteristics of study population[#]

Factor	HIV-, N=58	HIV+, N=62	P†
	Frequency (%)	Frequency (%)	
Male Gender	28/58 (48.3%)	43/62 (69.4%)	0.02
Race‡			
- White	10/57 (17.5%)	7/62 (11.3%)	0.33
- Black	47/57 (82.5%)	55/62 (88.7%)	
Current smoking at enrollment	35/58 (60.3%)	38/62 (61.3%)	0.92
Reported alcohol consumption in past 30 days	36/58 (62.1%)	35/62 (56.5%)	0.53
History of bone fracture (after 18 years of age)	24/58 (41.4%)	13/62 (21.0%)	0.02
	Mean (SD)	Mean (SD)	
Enrollment Age (years)	41.2 (5.9)	39.2 (6.4)	0.08
Body Mass Index (kg/m²)	31.1 (9.0)	26.0 (5.8)	0.0003
Calcium (mg/dL)	9.3 (0.4)	9.3 (0.4)	0.81
AST/SGOT (U/L)	20.6 (7.0)	29.3 (15.3)	0.0001
ALT/SGPT (U/L)	18.1 (8.8)	27.2 (19.2)	0.001
Creatinine Clearance (mg/dL)	125.2 (43.9)	117.3 (33.1)	0.27
	Mean (SD)	Mean (Q1, Q3)	
CD4 count (cells/mm³)	-	149 (66, 235)	-

†Characteristics are compared between HIV serostatus groups with a two-sample t-test for continuous variables and a Chi-square test for categorical variables.

‡One study participant was Asian and is not included in the race analysis.

[#]Table adapted from Titanji et al, PLoS Pathog. 2014 Nov 13;10(10):e1004497

Table S2. DXA Results-Bone Mineral Density (BMD), T-score and Z-score[#]

Outcome	HIV-		HIV+		Difference Mean (95% CI)	P†
	N	Mean (95% CI)	N	Mean (95% CI)		
Hip BMD (g/cm ²)*	58	1.13 (1.09, 1.18)	62	1.08 (1.04, 1.12)	-0.05 (-0.11, 0.01)	0.16
Hip T-score*	58	0.69 (0.33, 1.05)	62	0.14 (-0.15, 0.44)	-0.55 (-1.01, -0.09)	0.03
Hip Z-score	58	-0.17 (-0.48, 0.14)	62	-0.64 (-0.90, -0.39)	-0.47 (-0.87, -0.08)	0.03
Femur neck BMD (g/cm ²)*	58	1.11 (1.06, 1.15)	62	1.08 (1.04, 1.11)	-0.03 (-0.09, 0.03)	0.44
Femur neck T-score*	58	0.69 (0.35, 1.04)	62	0.28 (-0.02, 0.58)	-0.41 (-0.86, 0.03)	0.14
Femur neck Z-score*	58	-0.06 (-0.37, 0.24)	62	-0.43 (-0.68, -0.17)	-0.37 (-0.76, 0.03)	0.14
Lumbar spine BMD (g/cm ²)	58	1.28 (1.22, 1.33)	61	1.27 (1.23, 1.31)	-0.01 (-0.07, 0.06)	0.75
Lumbar spine T-score	58	0.66 (0.21, 1.10)	61	0.53 (0.22, 0.84)	-0.13 (-0.66, 0.40)	0.78
Lumbar spine Z-score	58	-0.20 (-0.60, 0.20)	61	-0.14 (-0.42, 0.14)	0.06 (-0.42, 0.54)	0.47

*Averaged across left and right sides.

†Characteristics are compared between HIV serostatus groups with Wilcoxon rank-sum test for BMD.

[#]Table adapted from Titanji et al, PLoS Pathog. 2014 Nov 13;10(10):e1004497

Table S3. Multivariable analyses of T cell OPG and RANKL expression (Cells/ μ l)

Outcome	Predictor		n	Adjusted Mean (95% CI)	P	Mean Difference(95% CI)
T cell OPG (cells/μl)	HIV status	HIV Negative	57	401 [357,444]	<0.001	189 [126,252]
		HIV Positive	61	211 [166,257]		
	Age, years	30-40	62	315 [272,358]	0.58	
		41-50	56	298 [253,342]		
	Sex	Female	47	286 [235,337]	0.25	
		Male	71	326 [285,368]		
	BMI, kg/m²	<25.0	50	299 [249,350]	0.94	
		25.0-29.9	31	312 [253,371]		
		≥30	37	307 [250,364]		
T cell RANKL (cells/μl)	HIV status	HIV Negative	57	118 [80,156]	0.25	32 [-23, 87]
		HIV Positive	61	86 [46,126]		
	Age, years	30-40	62	115 [77,152]	0.37	
		41-50	56	90 [50,130]		
	Sex	Female	47	98 [54,143]	0.79	
		Male	71	106 [70,143]		
	BMI, kg/m²	<25.0	50	108 [64,153]	0.88	
		25.0-29.9	31	92 [41,144]		
		≥30	37	106 [55,156]		
T cell RANKL/OPG ratio	HIV status	HIV Negative	57	0.29 [0.19, 0.38]	0.016	-0.17 [-0.31,-0.03]
		HIV Positive	61	0.45 [0.35, 0.56]		
	Age, years	30-40	62	0.38 [0.28, 0.47]	0.81	
		41-50	56	0.36 [0.26, 0.46]		
	Sex	Female	47	0.42 [0.31, 0.53]	0.18	
		Male	71	0.32 [0.23, 0.41]		
	BMI, kg/m²	<25.0	50	0.43 [0.31, 0.54]	0.41	
		25.0-29.9	31	0.32 [0.19, 0.44]		
		≥30	37	0.37 [0.25, 0.49]		

Table S4. Demographic and clinical characteristics of HIV+ individuals stratified by CD4+ T cell counts

Factor	CD4 count <200 (n=42)	CD4 count ≥ 200 (n=19)	P†
	Frequency (%)	Frequency (%)	
Male Gender	28/42 (67%)	15/19 (79%)	0.38
Race‡			
- White	3/42 (7%)	3/19 (16%)	0.37
- Black	39/42 (93%)	16/19 (84%)	
	Mean (SD)	Mean (SD)	
Enrollment Age (years)	38.8 (6.5)	38.1 (6.2)	0.65
Body Mass Index (kg/m²)	25.4 (6.2)	27.0 (5.1)	0.19
	Mean (Q1, Q3)	Mean (Q1, Q3)	
CD4 count (cells/mm³)	89 (33, 151)	437 (239, 556)	

† Characteristics are compared between groups with a two-sample t-test for continuous variables and a Chi-square test for categorical variables.

‡ One study participant was Asian and is not included in the race analysis.

Table S5. DXA Measurements, bone turnover markers and T cell OPG and RANKL in HIV+ individuals stratified by CD4+ T cell counts

Outcome	CD4 count <200		CD4 count ≥ 200		Difference Mean (95% CI)	P†
	N	Mean (95% CI)	N	Mean (95% CI)		
Hip BMD (g/cm ²)*	42	1.07 (1.02, 1.12)	19	1.12 (1.04, 1.19)	0.05 (-0.04, 0.13)	0.28
Hip T-score*	42	0.08 (-0.29, 0.46)	19	0.35 (-0.21, 0.92)	0.27 (-0.40, 0.93)	0.42
Hip Z-score	42	-0.69 (-1.02, -0.37)	19	-0.43 (-0.91, 0.05)	0.26 (-0.31, 0.84)	0.36
Femur neck BMD (g/cm ²)*	42	1.06 (1.01, 0.6)	19	1.07 (0.97, 1.17)	0.01 (-0.08, 0.11)	0.80
Femur neck T-score*	42	0.24 (-0.011, 0.6)	19	0.37 (-0.2, 0.93)	0.12 (-0.51, 0.76)	0.70
Femur neck Z-score*	42	-0.45 (-0.77, -0.13)	19	0.33 (-0.79, 0.14)	0.12 (-0.40, 0.68)	0.66
Lumbar spine BMD (g/cm ²)	42	1.26 (1.22, 1.31)	19	1.3 (1.21, 1.38)	0.03 (-0.05, 0.11)	0.43
Lumbar spine T-score	42	0.47 (0.12, 0.82)	19	0.69 (0.01, 1.37)	0.22 (-0.46, 0.89)	0.52
Lumbar spine Z-score	42	-0.16 (-0.48, 0.15)	19	-0.06 (-0.69, 0.56)	0.10 (-0.51, 0.71)	0.75
CTx (ng/ml)**	42	0.36 (0.28, 0.44)	19	0.47 (0.22, 0.73)	0.12 (-0.08, 0.32)	0.86
OCN (ng/ml)**	42	6.73 (4.80, 8.65)	19	5.84 (3.36, 8.32)	-0.89 (-4.14, 2.36)	0.87
T cell OPG (%)***	40	53 (45, 62)	18	41 (27, 55)	-12 (-28, 4)	0.15
T cell RANKL (%)***	40	23 (18, 29)	18	25 (13, 37)	1 (-10, 13)	0.82
T cell RANKL/OPG ratio	40	0.55 (0.39, 0.71)	18	0.69 (0.59, 0.14)	0.14 (-0.16, 0.45)	0.5

*Averaged across left and right sides.

**Measured by ELISA.

***Measured by flow cytometry.

†Characteristics are compared between groups with Wilcoxon rank-sum test for BMD.

Table S6 . Multivariable analyses of T cell CD69 and Ki-67 expression

Outcome	Predictor		n	Adjusted Mean (95% CI)	P	Mean Difference(95% CI)
CD69+ CD4+ T cell(%)	HIV status	HIV Negative	57	6.1 [3.7, 8.5]	0.020	-4.1 [-7.6, -0.7]
		HIV Positive	61	10.2 [7.7, 12.7]		
	Age, years	30-40	62	7.0 [4.6, 9.4]	0.18	
		41-50	56	9.3 [6.8, 11.7]		
	Sex	Female	47	9.5 [6.7, 12.3]	0.16	
		Male	71	6.8 [4.4, 9.1]		
	BMI, kg/m²	<25.0	50	10.2 [7.4, 13.0]	0.22	
		25.0-29.9	31	6.8 [3.6, 10.1]		
		≥30	37	7.3 [4.3, 10.4]		
CD69+ CD8+ T cell(%)	HIV status	HIV Negative	57	1.8 [1.0, 2.6]	0.012	-1.5 [-2.6, -0.3]
		HIV Positive	61	3.3 [2.5, 4.1]		
	Age, years	30-40	62	2.2 [1.4, 2.9]	0.16	
		41-50	56	2.9 [2.1, 3.7]		
	Sex	Female	47	2.8 [1.9, 3.7]	0.40	
		Male	71	2.3 [1.5, 3.0]		
	BMI, kg/m²	<25.0	50	3.5 [2.6, 4.4]	0.06	
		25.0-29.9	31	2.1 [1.0, 3.1]		
		≥30	37	2.1 [1.1, 3.1]		
Ki-67+ CD4+ T cell(%)	HIV status	HIV Negative	57	2.6 [0.9, 4.2]	0.006	-3.3 [-5.7, -1.0]
		HIV Positive	61	5.9 [4.4, 7.4]		
	Age, years	30-40	62	4.6 [3.2, 6.0]	0.44	
		41-50	56	3.8 [2.2, 5.4]		
	Sex	Female	47	3.5 [1.9, 5.2]	0.26	
		Male	71	4.9 [3.4, 6.5]		
	BMI, kg/m²	<25.0	50	3.7 [1.9, 5.5]	0.82	
		25.0-29.9	31	4.5 [2.5, 6.5]		
		Ki-67+ CD8+ T cell(%)	HIV status	HIV Negative		
	HIV Positive	61	4.9 [3.6, 6.2]			
	Age, years	30-40	62	3.3 [2.1, 4.5]	0.74	
		41-50	56	3.6 [2.2, 5.1]		
	Sex	Female	47	3.0 [1.6, 4.5]	0.42	
		Male	71	3.9 [2.5, 5.3]		
	BMI, kg/m²	<25.0	50	4.6 [3.0, 6.2]	0.23	
		25.0-29.9	31	2.8 [1.1, 4.6]		

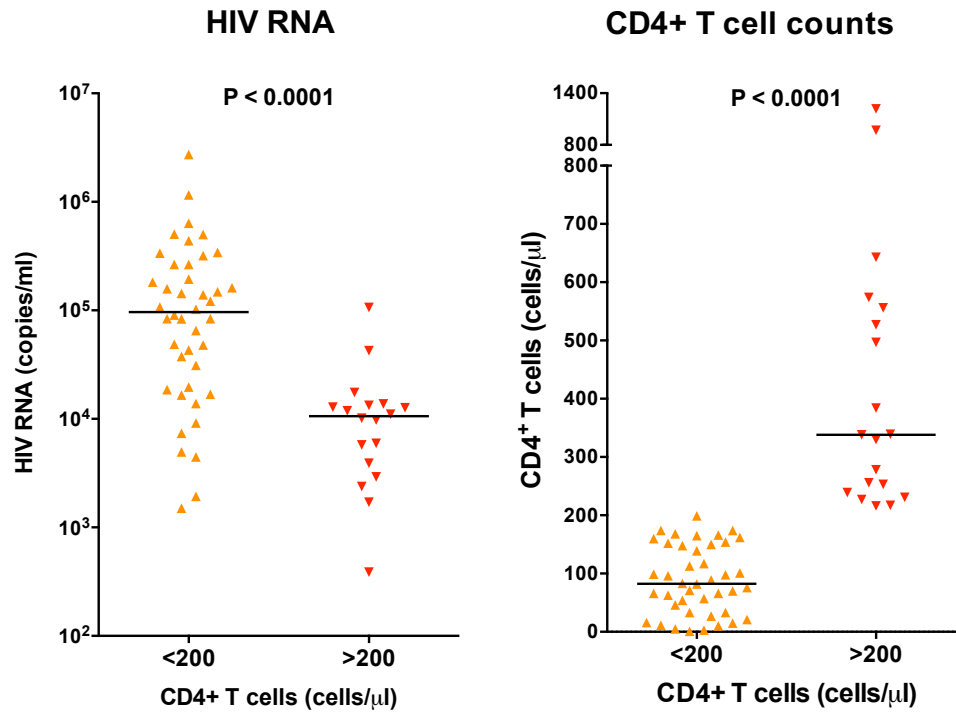


Figure S1

Comparison of viral load and CD4⁺ T cell counts in severely (< 200) and moderately ($\geq$ 200 cells/ μ l) CD4⁺ lymphocytopenic HIV-infected individuals. (Horizontal lines represent medians for CD4+ T cells and HIV RNA levels were compared using the Wilcoxon rank-sum test.