Table 1: General characteristics.

Month age	Numbers	BMD location	BMD measurement	Time of follow-up	Test index
3 m	40	No	No	12	Tb.Ar, Tb.Th, Tb.Sp, weight, Vaginal smear, blood calcium, Uterine index
6-8 w	80	Femur	DXA	2	BMD, Tb.N, Tb.Th, Tb.Sp, weight, blood, Ca, OB, OC
3 m	60	Femur, Lumbar	Not clear	8	BMD, weight
3 m	50	Lumbar	Not clear	5	BMD, Ca, P, ALP, Estrogen, Bone ash, Intestinal calcium absorption
3 m	16	Femur, Lumbar	DXA	8	BMD, Ca, P, Cr, BGP, HOP, Biomechanics
3 m	78	No	No	1, 2, 4, 6, 8, 10, 12	BGP, ALP, STRAP, HOP/Cr
3 m	20	Femur, Lumbar	Micro-CT	12	BMD, BV /TV, Tb.Th, Tb.N, Tb.Sp, LDL, TG, TC
7 w	32	Tibia	Micro-CT	8	weight, Fasting blood glucose, BV/TV, Tb.N, Tb.Sp
3 m	40	Lumbar	DXA	8	BMD, BMC, weight, fat, muscle
8 m	22	Tibia	DXA	12	BMD, weight, ALP, Wet weight of uterus, Bone ash (Ca, P), biomechanics, Vv, MTH, OBI, OCI, HYP
6-24 m	100	Not clear	DXA	12, 24, 36, 48	BMD
5 m	24	mandible	DXA	4, 8, 12	weight, Ca, P, ALP, BMD
5 m	30	Lumbar	DXA	4, 8, 12, 16, 20, 24	BMD, P1NP, CTX, Fe
5 m	24	Femur, Lumbar	DXA	12	BMD, BMC, BV /TV, Tb.Th, Tb.N, Tb.Sp
3 ± 0.5 (y)	24	Lumbar	DXA	9, 12	BMD, Tb.N, Tb.Th, Tb.Sp, BV /TV, Biomechanics
6-8y	10	Lumbar	DXA	16	BMD, Ca, P, ALP, ACP
No clear	40	Femur	Micro-CT	4-6	BMD, BV/TV, Tb.Th, Tb.N, Tb, Sp, ALT, AST
2 y	14	Femur, Tibia	No clear	24, 48, 72	Biomechanics
12 w	20	Femur, Tibia	Micro-CT	12	BMD, BMC, STRAP
4-6 w	18	Tibia	DXA	5	BMD, Tb.Th, Tb.A, Tb.N,
No clear	72	No	No	12	TBV, TRS, TFS, OSW, MAR, Mar
1.5 y	10	Femur, Tibia	No clear	24	BMD, BGP, Biomechanics, Bone geometric parameters
10 m	20	Lumbar-4	Single photon absorptiometer (SPA)	14	BMD, Tb.pm, TBV, MTT, Tb.A
8 w	20	No	No	8	Tb.Th, Tb.Sp, Tb.Ar, weight, Water consumption, Food intake
9 m	40	Tibia	Bone mineral analyzer	6, 12	BMD, Ca, P, ALP, Ca/Cr, P/Cr, HOP/Cr, Biomechanics
2 y	15	No	No	24, 72	Bone morphological index (TBV/TTV, S/V, TBV/SBV, MTPT, MTPD, MTPS)Bone dynamic index (Sfaces, DDL, TOS, MOSW, MiAR, MLT, Svf, OMP)
4.2 ± 0.5 y	10	Lumbar-4, 5	DXA	52	BMD, compression test, Axial pull out test
No clear	40	Femur	BMD400 EBone densitometer	8	BMD, E2
8 w	36	Femur	Micro-CT	6	BMD, BV/TV, Tb.Th, Tb.N, Tb.Sp, BS/BV
7, 13 w	18	Femur, L3, whole body	DXA	No clear	BMD, ALP, ACP, OC, stiffness, Peak Load
14 m	21	Femur	SPA	16	BMD, BMC, Biomechanics, Cross sectional structure of femoral midpoint
24 m	60	No	No	12	Femoral volume, BMC
4-5 m	86	No	No	14	Compression, bending, torsion, impact test
6 m	40	Femur	DXA	8	BMD, BMC, weight, LEES Index, Uterine morphology
12 w	50	Femur, Tibia	DXA	3 m	BMD, Ca, P, ALP, BGP, IGF-1, PTH, TRAP
3, 6 m	32	lumar, Femur	DXA	20	BMD, E2, T, E2/T, T
3 m	40	lumar, Femur, humerus	DXA	3 m	BMD
4±1.5 y	20	lumar, Femur	DXA	4, 12 m	BMD, Tb.Th, Tb.N, Tb.Sp, BS/BV, BV/TV, Mean thickness of cortical bone, Compressive stress, Maximum bending load

No, clear	60	lumar, Femur	DXA	8	BMD, Tb.Ar, Tb.W, weight , ACTH, TSH, cAMP, eGMP, cAMP/eGMP, OC.N, OB.N
No, clear	45	lumar, Femur	DXA	12	BMD, Tb.Ar, Tb.W, weight, ACTH, TSH, CRH, FT3, cAMP, eGMP, cAMP/eGMP, OC.N, OB.N, OPG, RANK, RANKL
5-7 y	16	lumar	DXA	4, 8, 12	BMD, Tb.Th, Tb.N, Tb.Sp, Tb.Ar, CA, P, AKP, Biomechanics
2 m	42	No	No	15, 30, 60 d	Cross sectional area of bone (T6, L3, Femoral shaft), PTH, CT, T6, L3 (Biomechanics, Mineral salt)T6, L3 (collagen content)
3 m	16	Femur	SPA	3m	%Tb.Ar Tb.Sp %L.Pm MAP BFR/TV MLT %O.Pm %E.Pm
6 m	32	whole body	DXA	12	BMD
14 m	20	Femur, Tibia	SPA	13	BMD, AKP, S-Ca, S-P
5 m	20	whole body	DXA	4, 8, 12, 16, 20, 24	BMD, BGP, B-ALP, TRAP-5b, Biomechanics , BV/TV, Tb.N, Tb.Sp, MAR, OS/BS, Oc.No/Tb.Pm, ES/BS
3 m	32	lumar	DXA	5, 10	BMD
No clear	48	Femur	DXA	3m	BMD, BMC, weight, cAMP, eGMP, cAMP/eGMP, E2, T, T3, T4, ACTH
12 w	70	Femur, humerus	DXA	8, 10, 12	BMD
4 m	20	whole body	DXA	8, 10, 12	BMD
3, 6, 9 m	48	whole body	DXA	30, 45, 60d	BMD
4 m	20	L2-4, Femur, humerus	DXA	4	BMD, Ca, P, E2, ALP, TRAP
4 w	20	Femur, humerus	DXA	8	BMD, Bone ash (weight, Ca, P), OBI, OCI, TRP, TBV, geometric parameter, Structural mechanical parameters
No clear	60	Femur	DXA	8	BMD, Ca, P, ALP, Three-point bending test, biomechanical property (Maximum loads , Breaking load, Energy absorption, Structural stiffness, Maximum bending moment, Elasticity modulus, Ultimate strength, Breaking strength)
					Maximum strain (%)
					Breaking strain (%))
6 m	56	Femur	DXA	2, 4, 8	BMD, Tb.Th, Tb.Sp, Tb.N, BS/BV, BV/TV, Ca, P, TC, TG
3	12	Femur, Tibia	micro-CT	24	BV, Tb.Th, Tb.Sp, Tb.N, Trabecular pattern factor, Structure model index,
36	33	Tibia	micro-CT	36	SMI, BMD, Tb.Th, Tb.Sp, Tb.N
No clear	26	distal radius	DXA	3, 6, 9 m	Ct.Wi, B.Ar/T.Ar, O.Ar/B.Ar, O.Pm/B.Pm, E.Pm/B.Pm , Oc.Pm/B.Pm
No clear	16	Femurs, Lumbar	DXA	12 m	U-Mg , S-Mg , Bone Mg , Bone weight, Breadth of Femur , BDL, BDF, Fmax, U-PYD I, U-PYD II, U-DPDI , U-DPD II, Bone PYD, Bone DPD, BV/TV , TBPf
6-7 y	5	No	No	12, 24 m	BV/TV, Tb.Th, Tb.Sp, Tb.N, N.Oc/B.Pm, N.Ob/B.Pm , Oc.S/BS, Ob.S/BS, OS/BS, ES/BS, MS/BS , BFR/BS , Urine cross-laps, Bone alkaline phosphatase, Iy, a, Sb, Fmax, Eapp, smax
18-20 m	37	Lumbar, mandible and maxilla	QCT	6, 9 m	BMD, AKP, BSAKP, PO_4^{2-}, Ca, β-Crosslaps, Osteocalcin, OPG, 1, 25 (OH)2D3, 25 (OH)2D3
6.9±0.8 y	18	distal radius	pQCT	12, 17, 22, 40	BMD, BV/TV, BS/BV, Tb.Th, Tb.Sp, Tb.N, SMI,
6-7 y	16	No	No	12	BV/TV
4 m	30	No	No	4	ctBMC, tBMC, BV/TV, BS/BV, Tb.Th, Tb.Sp, Tb.N
5 y	24	distal radius, Lumbar	pQCT	5 m	BV/TV, Tb.Th, Tb.Sp, Tb.N, SMI
3 d	120	NO	NO	6, 10 d	BV/TV, Tb.Th, Tb.Sp, Tb.N, QS/BS, OS/BS, ES/BS
5, 12 m	32	Femurs, Tibia, Lumbar	micro-CT	5, 12 m	BMD, BV/TV, Tb.Th, Tb.Sp, Tb.N, TBPf, SMI, DA, weight, Femoral length, Tibial length, L4 height , Cortical bone area, Cortical thickness , Periosteal perimeter, Endocortical perimeter, Medullary area, Cortical BMD
4 m	84	No	No	4	N.Nd/N.Tm, Nd.Nd, N.Nd, Tm.Tm/TSL, total tissue area, percentage cortical bone area, percentage marrow area, endosteal osteoid sueface, endosteal eroded sueface, endosteal bone formation rate, periosteal bone formation rate
No clear	10	No	No	14	Tb.Th, Tb.N, O.Th, Resorp. Lacunae, Resorp. lacunae/Resorp, surface, Resorp. lacunae/Trab, surface, Resorp. Surface, Resorp. surface

6 m	36	Global, Femurs, Lumbar	DXA	6	BMD, BMC
6 m	24	Femurs	pQCT	8, 16	BMD, BMC, BA, weight, Femur (Cortical thickness, Diameter, Area), three-point bending (Ultiate force, Ultimate stress, Stiffness, Elastic modulus, Work to failure, Toughness)
10	97	No	No	3, 4, 6	Weight, Ash weightash weight/body weight , bone volume, length of Femur, Stress and strain, TBV, diameter, conical bone area, and bone marrow area
No clear	12	No	No	12, 24m	BV/TV, Ce.V/TV, Tb.Th, Tb.Sp, Tb.N, O.Th, OV/TV, MAR, BFR/BS, Aj.AR, Mlt, Omt
No clear	30	No	No	4, 8	BV/TV, Tb.Th, Tb.Sp, Tb.N, CTX, Osteocalcin, Ca, P, Fe, Cu, Zn, Ni, Ca/P, and Cu/Zn,
2-3 m	229	Femur	Micro CT	2-3, 4-5, 6-8, 9-11, 12-15, 16-20, 21-25 m	sigmaGS/D2, CTI, shaft, canal, length, proportion, cortical area, Bone ash weight (Ca, P), HYP
6 m	36	Tibia, Femur	DXA	17	BMD, weight
(skeletally mature)	13	vertebral, Femur	DXA	12, 24 m	BV/TV, BMD, TMD, SMI, Tb.Sp, Tb.Th, DA, EM, SM
5.5 y	28	Lumbar	DXA, Micro CT	8 m	BV/TV, BS/BV, Tb.Th, Tb.Sp, Tr.N, SMI, F, k, S, E, Ca, C4H8N
33.5 ± 9.6 m	32	Lumbar, Tibia, radius, Femur	DXA, Micro CT	10 m	BMD, BV/TV, BS/BV, Tb.N, Tb.Th, Tb.Sp, DA, ConnDens, Structure model index, Bone ash values, sRANKL, BAP, OC, CICP, PYD, Crosslaps, PTH, VitD3
24 w	80, 16, 30	Femur, Tibia	CT	8, 12, 24/24/14 w	weights (liver, spleen, kidneys, food), , Liver, volume, length, CT index, CT ratio, Tb.Th, thickness, Resorption, Mineralizing, Mineral apposition rate, Adjusted apposition rate, Bone formation rate, Small intestine, Serum, Urine, Ca, p, Ca/Cr, Ash
57 w, 7 w	36, 12	No	No	4 w	weights, ALP, s-Ca, S-P, Osteocalcin, Osteopontin, DeoxypyridiNoline, Gla/Cr, Ca/Cr, P/Cr, S-Fe, S-GPx, Fe/Cr, 8-OHdG/Cr
10 w	20	Femur	Micro CT	8, 10 w	BMD
8 w	29	Lumbar, knee, Tibia	DXA	6 w	BA, BMC, BMD
8 w	140	No	No	4, 8, 12, 16 w	s-CA, s-P, s-Ca.P, s-AKP, s-BGP
8 m	32	Lumbar	Micro CT	0, 6, 10 w	weight, BMD, BV/TV, BS/BV, Tb.Th, Tb.Sp, Tr.N, CD, Maximum load, Displacement, Stiffness, Energy
11-13 m	20	Tibia	Micro CT	12 w	weights, BMD, BV/TV, Tb.Th, Tb.Sp, Tr.N, Conn.D
6 m	35	Tibia	Micro CT	12 w	weights, Ct.Po, Ca.Dm, Tt.Ar, Ct.Ar, Ma.Ar, Ct.Th, imin, imax, Zpol, sL.On/Ct.Ar, dL.On/Ct.Ar, Rs.N/Ct.Ar, a.Rm.Cr/Ct.Ar, sL.On+dD.On/Rs.N, W.Th, On.MAR, Ac.f, BV/TV, Tb.Th, Tb.Sp, Tr.N
3 m	8	Tibia	Micro CT	1, 4, 12 w	BMD, BV/TV, BS/BV, Tb.Th, Tb.Sp, Tr.N, Percent bone volume, Tissue surface, Bone surface, Intersection surface, Bone surface/volume ratio, Bone surface density
8 w	36	No/Femur	No/microscope	60 d	acid-base status, S-Na, S-K, S-Cl, SB, S-Ca, S-P, PTH, Calcitriol, Urinary stone risk factors, Tb.Th, OV/BV, OS/BS, OBS/BS, ES/BS, OCS/BS, MS/BS, MAR
3-7 y	15	No	No	0, 8, 12, 16, 20, 24, 28, 32, 36, 40, 44, 48 w	S-Ca, S-P, S-ALP, Skeletal-ALP, Ct, Ar, compresslon testing, Failure load, Rigidity, Work-to-falure
12 m	8	Tibia, Lumbar	Micro CT	10 w	BV/TV, Tb.Th, Tb.Sp, Tr.N, Conn.D
12, 18 w	33	Tibia, Femur, Lumbar	Micro CT	4, 8, 12, 18 w	BV/TV, Tb.Th, Tb.Sp, cn.TMD, GP.TH, N.Ob/BS, N.Ocl/BS, Cortical Parameters
4-7 y	16	Tibial, Lumbar, Femur	No/microscope, ct	6, 12 m	BV/TV, BS/BV, Tb.Th, Tb.Sp, Tr.N, ON/BV, OS/BS
3 m	36	Tibial, Lumbar, Femur	DXA	90 d	BMD, BV/TV, Tb.Th, Tb.N, Tb.Sp, Ob.S/BS, Oc.S/BS, MS/BS, MAR, BFR/BS, BFR/BV, LGR, Ma.V/TV, Ps-MS/BS, Ps-MAR, Ps-BFR/BS, Ps.S, Ec.S, Ct.Th, Ec-MS/BS, Ec-MAR, Ec-BFR/BS, Ca, P, Hyp
7-9 y	28	Lumbar, Femur	DXA	2, 5 m	BMD, OC, CTx-1
2-3 m	28	Tibial	Micro CT	6, 16 w	BV/TV, Tb.Th, Tb.Sp, SMI
0 (embryo)	15	whole body	stereomicroscope	3-9 dpf	mineralized area, body length, Integrated optical density

6 w	35	Tibial, Lumbar	unkNow	0, 4, 6, 14 w	weight, BV/TV, Tb.Th, Tb.N, OV/TV, Ob.S/BS, ES/BS, Oc.S/BS, N.Oc/BS, MAR, dLS/BS, BFR/BS"
unkNown	20	Femur	Micro CT	53 d	BMD (Cortical, Trabecular), BV/TV, Tb.Th, Tb.Sp, Tr.N, SMI, Tb.Pf
18 m	70	Femur, Lumbar	DXA	12 w	BMD, 25 (OH)D, 1, 25 (OH)2D, 25-1, 25-R
2 m	24	Femur	Micro CT	2 m	BMD, BV/TV, Tb.Th, Tb.Sp, Tb.Pf, SMI, Cortical
6 w	18	No/Femur	No	3 w	weight, ALPase activity, PICP and osteocalcin, PCR
8 w	21	Femur	pQCT, Micro CT	12 (b), 16 w	BMD, BV/TV
85 d	24	Lumbar, humerus	microscope	540 d	Type and length of trabecular struts
28 d, 5-7 m	23	No/Femur, Tibia	No	1-6 w	weight, S-Ca, S-PTH, Ash Mg, Ash Ca, Ash P, BV/TV, Nob/BPm, OS/BS, NOc/BPm, ES/BS OcS/BS
4-5 y	10	mandibles	pQCT	6 m	N.Ot, N.Oc/B.Pm, N.Ob/B.Pm, Oc.S/BS, Ob.S/BS, OV/BV, OS/BS, BV/TV, Tb.Th, Tb.N, Tb.Sp
3 m	18	No/Lumbar, Femur	No/Epson 3200 Perfect 扫描仪	4 w	weight, BV/TV, Tb.Th, Tb.Sp, Tr.N, cortical, Dynamic, S-Ca, S-P, S-OPG, BALP, CrossLaps, PTH
3 m	30	Femur	DXA	4, 8, 12 w	BMD, VHT, VAT, VTB, MKC.N, OB.N, OC.N, MC.N
6-8, 9-15 y	38, 31	Lumbar	DXA	1 y	BMD, BMC
5-6 y	49	No/Femur, humerus, radio ulnar	No/SEM	145 d	C, Ca, O, Na, Mg, P
8 m	35	Lumbar	DXA	6	BMD

Table 2: BMD.

Lumbar								
			Test group (T)			Control group (C)		
Author/year	**Country**	**Time (Weeks)**	**Sample**	**Mean**	**SD**	**Sample**	**Mean**	**SD**
Shi, 2009	China	8	30	0.149	0.013	22	0.196	0.014
Zhang, 2008	China	0	8	274	29	8	269	14
		8	8	236	24	8	271	32
		12	8	185	15	8	266	31
Liu, 2012	China	0	5	1.13	0.16	5	1.15	0.17
		52	5	0.84	0.14	5	1.11	0.16
Lu, 2003	China	8	8	0.186	0.028	8	.0.240	0.028
Chen, 2007	China	No clear	6 (7w)	0.089	0.005	6	0.121	0.007
			6 (13w)	0.072	0.004			
Cui, 2016	China	0	8 (OVX+GC)	1.04	0.07	8 (OVX)	1.08	0.07
		9	8 (OVX+GC)	0.79	0.05	8 (OVX)	0.92	0.05
		12	4 (OVX+GC)	0.67	0.04	4 (OVX)	0.76	0.03
Quan, 2008	China	14	10	1.93	0.08	10	2.13	0.09
Tian, 2007	China	12	11	0.156	0.004	11	0.179	0.006
Ye, 2017	China	0	10 (OVX+Fe)	287.55	27.53	10 (OVX)	288.43	27.95
		4	10 (OVX+Fe)	290.64	30.24	10 (OVX)	290.09	35.95
		8	10 (OVX+Fe)	286.46	30.32	10 (OVX)	287.40	32.08
		12	10 (OVX+Fe)	283.43	29.47	10 (OVX)	285.10	32.54
		16	10 (OVX+Fe)	249.26	24.34	10 (OVX)	260.44	34.21
		20	10 (OVX+Fe)	221.14	22.84	10 (OVX)	245.32	32.25
		24	10 (OVX+Fe)	187.25	18.46	10 (OVX)	209.27	35.65
Zhen, 2009	China	12	8	0.079	0.013	8	0.102	0.021
		24	8	0.120	0.011	8	0.161	0.013
Wu, 2007	China	12	10 (OVX)	0.092	0.075	10	0.135	0.017

			10 (DEX)	0.086	0.013	10	0.124	0.018
Sun, 2017	China	2	20 (L)	0.199	0.002	20	0.216	0.001
			20 (M)	0.174	0.003			
			14 (H)	0.187	0.002			
Wu, 2007	China	0	4 (OVX-4)	1.26	0.08	8 (OVX-12)	1.11	0.10
		12	4 (OVX-4)	0.86	0.09	8 (OVX-12)	1.28	0.06
Chen, 2015	China	8	15 (cortisol)	3.86	0.42	15 (s)	4.04	0.21
		8	15 (ovx+corticol)	3.15	0.72	15 (ovx)	3.35	0.63
Xia, 2013	China	12	15 (ovx)	3.45	0.64	15	4.34	0.52
		12	15 (ovx+thyroxine)	3.05	0.77			
Wang, 2012	China	0	8	0.828	0.049	8	0.817	0.050
		4	8	0.787	0.048	8	0.820	0.058
		8	8	0.709	0.064	8	0.820	0.063
		12	8	0.577	0.085	8	0.821	0.053
Wang, 2019	China	12	12	0.21	0.01	15	0.16	0.03
Yang, 2013	China	0	8 (cortisol)	269	13	8 (OVX)	269	13
		5	8 (cortisol)	246	19	8 (OVX)	256	22
		10	8 (cortisol)	221	13	8 (OVX)	222	18
Jia, 2012	China	4	10	0.25	0.01	10	0.32	0.03
Chen, 2009	Japan	5M	16 (SAMP6)	235.5	29.8	16 (SAMR1)	284.3	35.7
		12M	16 (SAMP6)	229.4	29.1	16 (SAMR1)	277.8	30.7
Schulz, 2017	Germany	0	29 (prednisolone)	377.80	51.49	8	464.70	46.44
		6	29 (prednisolone)	339.87	57.84	8	382.71	40.90
		9	29 (prednisolone)	366.37	71.76	8	444.67	43.29
Liu, 2014	Hong Kong	0	3	0.41	0.04			
		2	15	0.47	0.07	15	0.4	0.04
		4	15	0.44	0.03	15	0.39	0.03
		12	15	0.48	0.07	15	0.32	0.05
		24	15	0.49	0.02	15	0.28	0.03
		36	15	0.47	0.04	15	0.26	0.06
Dick, 1996	Australia	0	18	0.17	0.014	18	0.168	0.011
		6	18	0.157	0.016	18	0.16	0.012
Femur								
			Test group (T)			**Control group (C)**		
Author/year	**Country**	**Time (Weeks)**	**Sample**	**Mean**	**SD**	**Sample**	**Mean**	**SD**
Shi, 2009	China	8	30	0.144	0.017	22	0.192	0.012
Zhang, 2008	China	0	8	295	41	8	300	37
		8	8	235	67	8	306	35
		12 (远)	8	189	56	8	293	42
		12 (近)	8	165	39	8	291	54
Qiao, 2009	China	8	20	0.2108	0.0157	20	0.2196	0.0147
Luo, 2017	China	6	18	98.75	12.08	18	218	19
Huang, 2017	China	12	10	195.45	15.26	10	235.72	15.36
Xu, 2020	China	4	10	0.83	0.04	10	0.84	0.02
		6	10	0.82	0.02	10	0.88	0.02
Liu, 2004	China	5	10 (DEX)	334.3	25.5	10 (Ⅰ)	359.8	18.0
		5	20 (RA)	321.9	29.8	10 (Ⅱ)	365.3	17.0
Lu, 2003	China	8	8	0.160	0.025	8	0.189	0.017
Chen, 2004	China	16	11	0.389	0.008	10	0.406	0.010

Zhang, 2003	China	8	10 (OVX)	0.2466	0.0426	10	0.3731	0.0451
			10 (DM)	0.3011	0.0551			
			10 (OVX+DM)	0.2131	0.0423			
Shan, 2016	China	12	10 (RA)	189	0.025	10	227	0.009
			10 (D-galactose)	179	0.019			
			10 (PS)	181	0.004			
			10 (GC)	174	0.026			
Zhen, 2009	China	12	8	0.084	0.016	8	0.108	0.017
		24	8	0.108	0.013	8	0.145	0.022
Wu, 2007	China	12	10 (OVX)	0.091	0.133	10	0.124	0.021
			10 (DEX)	0.083	0.007	10	0.129	0.014
Wu, 2007	China	12	4	1.00	0.08	8	0.91	0.04
		52	8	0.93	0.05			
Chen, 2015	China	8	15 (cortisol)	9.80	0.68	15 (s)	10.02	0.74
		8	15 (ovx+corticol)	7.28	0.46	15 (ovx)	8.02	0.88
Xia, 2013	China	12	15 (ovx)	7.88	2.35	15	11.12	2.24
		12	15 (ovx+thyroxine)	7.06	2.82			
Ye, 1998	China	13	8 (Proximal)	0.29	0.01	8	0.29	0.01
			8 (middle)	0.29	0.02	8	0.29	0.02
			8 (Distal)	0.36	0.02	8	0.39	0.02
Zeng, 1999	China	13	10	0.230	0.029	10	0.262	0.014
Yang, 2013	China	0	8 (cortisol)	306	24	8 (OVX)	306	21
		5	8 (cortisol)	256	20	8 (OVX)	264	20
		10	8 (cortisol)	230	22	8 (OVX)	230	17
Li, 2015	China	12	10 (OVX+corticol)	0.1418	0.0134	10	0.1753	0.0057
			10 (OVX)	0.1418	0.0143			
Lei, 2001	China	12	30 (OVX)	0.238	0.034	30 (S)	0.278	0.013
Jia, 2012	China	4	10	0.23	0.03	10	0.27	0.01
Sun, 2004	China	8	7	0.161	0.004	7	0.190	0.003
Chen, 2009	Japan	5M	16 (SAMP6)	289.5	34.4	16 (SAMR1)	321.7	36.9
		12M	16 (SAMP6)	286.7	34.5	16 (SAMR1)	319.6	37.8
Liu, 2014	Hong Kong	0	3	0.27	0.04			
		2	15	0.35	0.11	15	0.32	0.08
		4	15	0.35	0.05	15	0.22	0.03
		12	15	0.4	0.09	15	0.14	0.01
		24	15	0.42	0.06	15	0.09	0.01
		36	15	0.32	0.06	15	0.08	0.01
Dick, 1996	Australia	0	18	0.161	0.014	18	0.158	0.011
		6	18	0.143	0.018	18	0.148	0.011
Dick, 1996	Australia	0	18	0.166	0.015	18	0.161	0.011
		6	18	0.15	0.019	18	0.155	0.011
Sevil, 2010	Turkey	8 (Proximal)	6	0.201	0.025	6	0.236	0.027
		8 (Midshaft)	6	0.285	0.028	6	0.299	0.026
		8 (Distal)	6	0.272	0.024	6	0.294	0.026
		8 (Total)	6	0.26	0.02	6	0.28	0.024
		16 (Proximal)	6	0.166	0.027	6	0.223	0.026
		16 (Midshaft)	6	0.26	0.041	6	0.307	0.017
		16 (Distal)	6	0.245	0.05	6	0.302	0.025
		16 (Total)	6	0.229	0.034	6	0.284	0.018
Tibia								

			Test group (T)			Control group (C)		
Author/year	Country	Time (Weeks)	Sample	Mean	SD	Sample	Mean	SD
Han, 2001	China	6	10	0.187	0.009	10	0.196	0.018
Han, 2001	China	12	10	0.17	0.031	10	0.195	0.014
Huang, 2017	China	12	10	170.2	10.08	10	223.75	10.26
Tang, 2019	China	5	6	261.31	9.57	6	326.47	12.48
Shan, 2016	China	12	10 (RA)	157	0.035	10	186	0.027
			10 (D-galactose)	149	0.012			
			10 (PS)	151	0.008			
			10 (GC)	153	0.024			
Zeng, 1999	China	13	10	0.187	0.012	10	0.201	0.009
Lei, 2001	China	12	30 (OVX)	0.194	0.013	30 (S)	0.214	0.008
Jia, 2012	China	4	10	0.24	0.05	10	0.32	0.04
Sun, 2004	China	8	7	0.141	0.003	7	0.171	0.003
Chen, 2009	Japan	5M	16 (SAMP6)	281.7	34.6	16 (SAMR1)	312.6	36.4
		12M	16 (SAMP6)	284.6	31.5	16 (SAMR1)	313.8	35.7
Liu, 2014	Hong Kong	0	3	0.4	0.03			
		2	15	0.44	0.12	15	0.38	0.08
		4	15	0.41	0.06	15	0.28	0.04
		12	15	0.51	0.09	15	0.19	0.01
		24	15	0.46	0.04	15	0.15	0.01
		36	15	0.37	0.04	15	0.1	0.02
Global								
			Test group (T)			Control group (C)		
Author/year	Country	Time (Weeks)	Sample	Mean	SD	Sample	Mean	SD
Chen, 2007	China	No clear	6 (7w)	0.072	0.002	6	0.087	0.001
			6 (13w)	0.064	0.003			
Sun, 2017	China	8	9 (OVX)	0.195	0.008	10	0.209	0.005
			10 (D-半乳糖)	0.205	0.004			
			10 (OVX+D)	0.184	0.004			
Lei, 2001	China	0	30 (OVX)	0.297	0.014	30 (S)	0.297	0.013
		8	30 (OVX)	0.286	0.012	30 (S)	0.301	0.015
		10	30 (OVX)	0.276	0.022	30 (S)	0.304	0.021
		12	30 (OVX)	0.268	0.025	30 (S)	0.303	0.012
Shen, 2006	China	0	10	0.0979	0.0013	10	0.0980	0.0014
		8	10	0.0949	0.0022	10	0.0978	0.0040
		10	10	0.0882	0.0050	10	0.0985	0.0043
		12	10	0.0838	0.0055	10	0.0981	0.0062
Zhang, 2012	China	4	8 (3M)	0.089	0.015	8 (3M)	0.117	0.021
		4	8 (6M)	0.116	0.013	8 (6M)	0.133	0.017
		4	8 (9M)	0.143	0.012	8 (9M)	0.155	0.022
Zhang, 2012	China	6	8 (3M)	0.120	0.016	8 (3M)	0.164	0.019
		6	8 (6M)	0.149	0.018	8 (6M)	0.171	0.021
		6	8 (9M)	0.162	0.020	8 (9M)	0.181	0.019
Zhang, 2012	China	8	8 (3M)	0.143	0.020	8 (3M)	0.186	0.023
		8	8 (6M)	0.162	0.017	8 (6M)	0.192	0.021
		8	8 (9M)	0.173	0.012	8 (9M)	0.191	0.018
Dick, 1996	Australia	0	18	0.132	0.009	18	0.13	0.004
		6	18	0.126	0.009	18	0.127	0.005
Mandible								

			Test group (T)			Control group (C)		
Author/year	Country	Time (Weeks)	Sample	Mean	SD	Sample	Mean	SD
Gong, 2008	China	0	8 (OVX+Lo.Ca)	0.521	0.080	8 (OVX)	0.520	0.040
		4	8	0.434	0.029	8	0.508	0.021
		8	8	0.395	0.026	8	0.461	0.064
		12	8	0.389	0.015	8	0.399	0.055
Schulz, 2017	Germany	0	29 (prednisolone)	541.23	151.83	8	613.41	74.99
		6	29 (prednisolone)	424.4	106.84	8	537.14	87.46
		9	29 (prednisolone)	402.89	99.23	8	598.83	112.85
Liu, 2014	Hong Kong	0	3	0.82	0.11			
		2	15	0.79	0.13	15	0.73	0.08
		4	15	0.88	0.1	15	0.81	0.03
		12	15	0.9	0.08	15	0.83	0.05
		24	15	0.97	0	15	0.83	0.07
		36	15	1.01	0.05	15	0.79	0.12
Maxilla								
			Test group (T)			Control group (C)		
Author/year	Country	Time (Weeks)	Sample	Mean	SD	Sample	Mean	SD
Schulz, 2017	Germany	0	29 (prednisolone)	421.91	119.20	8	569.21	66.24
		6	29 (prednisolone)	323.25	69.74	8	407.25	72.87
		9	29 (prednisolone)	315.51	71.23	8	474.80	76.36
Liu, 2014	Hong Kong	0	3	0.82	0.11			
		2	15	0.81	0.06	15	0.73	0.05
		4	15	0.86	0.08	15	0.83	0.06
		12	15	0.88	0.09	15	0.82	0.02
		24	15	0.93	0.02	15	0.87	0.01
		36	15	0.88	0.06	15	0.8	0.08
Humerus								
			Test group (T)			Control group (C)		
Author/year	Country	Time (Weeks)	Sample	Mean	SD	Sample	Mean	SD
Wu, 2007	China	12	10 (OVX)	0.090	0.089	10	0.130	0.099
			10 (DEX)	0.087	0.013	10	0.119	0.019
Liu, 2014	Hong Kong	0	3	0.36	0.02			
		2	15	0.42	0.09	15	0.33	0.04
		4	15	0.43	0.04	15	0.31	0.02
		12	15	0.48	0.06	15	0.19	0.04
		24	15	0.46	0.08	15	0.16	0.03
		36	15	0.38	0.05	15	0.13	0.04

Table 3: Bone morphometric index.

Tb.Pm (mm)								
Lumbar								
			Test group (T)			Control group (C)		
Study	Country	Time (Weeks)	Sample	Mean	SD	Sample	Mean	SD

Quan, 2008	China	14	10	37.16	4.72	10	41.26	5.02
Tibia								
			Test group (T)			**Control group (C)**		
Study	**Country**	**Time (Weeks)**	**Sample**	**Mean**	**SD**	**Sample**	**Mean**	**SD**
Sun, 2004	China	8	7	8896.8	1486	7	10906.0	1983.9
Tb.Ar (%)								
Lumbar								
			Test group (T)			**Control group (C)**		
Study	**Country**	**Time (Weeks)**	**Sample**	**Mean**	**SD**	**Sample**	**Mean**	**SD**
Quan, 2008	China	14	10	3.81	0.47	10	4.67	0.52
Wang, 2012	China	12	8	25.91	4.93	8	38.47	3.27
Femur								
			Test group (T)			**Control group (C)**		
Study	**Country**	**Time (Weeks)**	**Sample**	**Mean**	**SD**	**Sample**	**Mean**	**SD**
Qi, 2016	China	12	20	27.49	4.17	20	54.32	7.01
He, 2019	China	8	10	28.72	9.41	10	48.70	4.89
Xia, 2013	China	12	15 (ovx)	0.63	0.25	15	0.89	0.20
		12	15 (ovx+thyroxine)	0.51	0.23			
Tibia								
			Test group (T)			**Control group (C)**		
Study	**Country**	**Time (Weeks)**	**Sample**	**Mean**	**SD**	**Sample**	**Mean**	**SD**
Qi, 2016	China	12	20	34.01	5.31	20	58.12	7.32
Tang, 2019	China	5	6	26.14	1.79	6	48.31	2.67
Ye, 1998	China	13	8	6.83	2.24	8	21.07	4.21
Tb.Th (μm)								
Lumbar								
			Test group (T)			**Control group (C)**		
Study	**Country**	**Time (Weeks)**	**Sample**	**Mean**	**SD**	**Sample**	**Mean**	**SD**
Cui, 2016	China	9	10 (OVX+GC)	0.49	0.04	10 (OVX)	0.53	0.03
		12	10 (OVX+GC)	0.39	0.04	10 (OVX)	0.48	0.05
Quan, 2008	China	14	10	16.54	1.78	10	18.62	2.14

Sun, 2017	China	2	20 (L)	61.32	3.46	20	62.32	3.46
			20 (M)	0.62	0.16			
			14 (H)	59.98	4.28			
Wu, 2007	China	12	4	0.56	0.09	8	0.60	0.08
		52	8	0.48	0.09			
Wang, 2012	China	12	8	0.629	0.042	8	0.835	0.038
Wu, 1990	USA	14	6 (lo-Ca)	92.39	6.00	4	110.50	15.42
Lin, 2020	China	0				32	198	21
		2	24 (GC)	147	21	32	198	25
		4	24 (GC)	148	19	32	204	21
		8	24 (GC)	182	19	32	202	27
Oheim, 2012	Germany	24m	2 (HPD+OVX)	128.92	12.31	1	179.14	40.31
			2 (OVX)	142.06	37.25			
Chen, 2009	Japan	5M	16 (SAMP6)	53.08	6.33	16 (SAMR1)	66.21	7.37
		12M	16 (SAMP6)	55.72	6.08	16 (SAMR1)	69.37	7.84
Goldhahn, 2005	Germany	40	7	0.12	0.02	7	0.16	0.08
Eschler, 2005	Germany	5m	12	0.22	0.01	12	0.17	0.00
Iliac Crest								
			Test group (T)			**Control group (C)**		
Study	**Country**	**Time (Weeks)**	**Sample**	**Mean**	**SD**	**Sample**	**Mean**	**SD**
Goldhahn, 2005	Germany	40	7	0.08	0.01	7	0.1	0.02
Fini, 2000	Italy	0	6	154.54	22.89			
		12	6	115.4	6.35	6	151.54	15.52
		24	6	109.4	12.5	6	143.80	18.41
Femur								
			Test group (T)			**Control group (C)**		
Study	**Country**	**Time (Weeks)**	**Sample**	**Mean**	**SD**	**Sample**	**Mean**	**SD**
Qi, 2016	China	12	20	60.12	9.97	20	88.13	16.2
Zhang, 2008	China	12	8	0.11	0.02	8	0.15	0.04
Luo, 2017	China	6	18	0.039	0.04	18	0.841	0.08
Xu, 2020	China	4	10	0.07	0.01	10	0.08	0.00

		6	10	0.07	0.01	10	0.08	0.01
He, 2019	China	8	10	50.80	14.60	10	81.18	18.69
Wu, 2007	China	12	4	0.46	0.13	8	0.48	0.08
		52	8	0.30	0.08			
Wu, 1990	USA	14	6 (lo-Ca)	139.25	4.95	4	146.18	23.90
Lin, 2020	China	0				32	240	26
		2	24 (GC)	192	25	32	145	25
		4	24 (GC)	187	28	32	241	28
		8	24 (GC)	234	25	32	238	24
Wu, 2014	China	8	20 (CIA)	0.05	0.01	12	0.08	0.01
		16	20 (CIA)	0.06	0.02	12	0.08	0.01
Hui, 2018	China	24	6 (Silicosis)	0.10	0.01	6	0.11	0.01
Chen, 2009	Japan	5M	16 (SAMP6)	46.08	5.34	16 (SAMR1)	55.81	6.37
		12M	16 (SAMP6)	44.84	5.07	16 (SAMR1)	57.06	6.54
Kurth, 2001	Germany	4	15	0.09	0.01	15	0.1	0.02
Tibia								
			Test group (T)			**Control group (C)**		
Study	**Country**	**Time (Weeks)**	**Sample**	**Mean**	**SD**	**Sample**	**Mean**	**SD**
Qi, 2016	China	12	20	54.71	10.73	20	101.32	18.13
Tang, 2019	China	5	6	0.048	0.003	6	0.061	0.005
Hui, 2018	China	24	6 (Silicosis)	0.12	0.04	6	0.11	0.01
Chen, 2009	Japan	5M	16 (SAMP6)	45.71	5.30	16 (SAMR1)	53.64	6.27
		12M	16 (SAMP6)	45.39	5.29	16 (SAMR1)	54.87	6.09
Noor, 2014	Indonesia	4	10	2.789	0.319	10	1.479	0.001
		8	10	2.072	0.01			
Tb.Sp (μm)								
Lumbar								
			Test group (T)			**Control group (C)**		
Study	**Country**	**Time (Weeks)**	**Sample**	**Mean**	**SD**	**Sample**	**Mean**	**SD**
Cui, 2016	China	9	10 (OVX+GC)	**0.32**	**0.04**	10 (OVX)	**0.29**	**0.04**
		12	10 (OVX+GC)	**0.37**	**0.06**	10 (OVX)	**0.32**	**0.04**

He, 2019	China	8	10	182.96	29.87	10	135.47	38.20
Sun, 2017	China	2	20 (L)	1077.72	163.5	20	1057.64	164.46
		2	20 (M)	2419.81	210.4			
		2	14 (L)	1154.58	248.6			
Wu, 2007	China	12	4	0.29	0.09	8	0.27	0.07
		52	8	0.31	0.09			
Wang, 2012	China	12	8	2.77	0.22	8	2.36	0.19
Fang, 2005	China	12	10	221.20	22.68	10	215.84	18.59
		24	10	257.20	26.18	10	220.15	21.34
Lin, 2020	China	0				32	346	38
		2	24 (GC)	402	36	32	349	34
		4	24 (GC)	421	30	32	339	38
		8	24 (GC)	359	36	32	344	35
Oheim, 2012	Germany	24m	2 (HPD+OVX)	411.32	26.10	1	339.21	29.11
			2 (OVX)	353.09	45.72			
Chen, 2009	Japan	5M	16 (SAMP6)	277.5	34.0	16 (SAMR1)	217.9	26.7
		12M	16 (SAMP6)	286.7	31.6	16 (SAMR1)	**230.4**	**28.7**
Goldhahn, 2005	Germany	40	7	0.56	0.15	7	**0.45**	**0.12**
Eschler, 2005	Germany	5m	12	0.58	0.04	12	**0.52**	**0.01**
Iliac Crest								
			Test group (T)			**Control group (C)**		
Study	**Country**	**Time (Weeks)**	**Sample**	**Mean**	**SD**	**Sample**	**Mean**	**SD**
Goldhahn, 2005	Germany	40	7	0.7	0.12	7	0.51	0.07
Fini, 2000	Italy	0	6	296.97	71.24			
		12	6	315.05	22.77	6	**269.86**	**13.45**
		24	6	322.55	102.6	6	**271.49**	**55.27**
Femur								
			Test group (T)			**Control group (C)**		
Study	**Country**	**Time (Weeks)**	**Sample**	**Mean**	**SD**	**Sample**	**Mean**	**SD**
Qi, 2016	China	12	20	140.57	24.38	20	90.01	16.79
Luo, 2017	China	6	18	0.67	0.15	18	0.36	0.08

Zhang, 2008	China	12	8	0.63	0.05	8	0.43	0.05
Xu, 2020	China	4	10	0.22	0.03	10	0.17	0.01
		6	10	0.27	0.08	10	0.2	0.03
Wu, 2007	China	12	4	0.36	0.08	8	0.28	0.07
		52	8	0.39	0.13			
Lin, 2020	China	0				32	316	30
		2	24 (GC)	349	32	32	314	31
		4	24 (GC)	360	29	32	316	35
		8	24 (GC)	333	30	32	316	33
Wu, 2014	China	8	20 (CIA)	0.48	0.12	12	0.23	0.05
		16	20 (CIA)	1.35	0.36	12	0.42	0.08
Hui, 2018	China	24	6 (Silicosis)	0.82	0.16	6	0.54	0.05
Chen, 2009	Japan	5M	16 (SAMP6)	338.1	40.6	16 (SAMR1)	287.4	33.0
		12M	16 (SAMP6)	329.6	38.7	16 (SAMR1)	295.5	36.1
Kurth, 2001	Germany	4	15	0.33	0.03	15	0.17	0.05
Tibia								
			Test group (T)			**Control group (C)**		
Study	**Country**	**Time (Weeks)**	**Sample**	**Mean**	**SD**	**Sample**	**Mean**	**SD**
Qi, 2016	China	12	20	54.71	10.73	20	101.32	18.13
Ye, 1998	China	13	8	864.84	224.3	8	222.97	44.95
Hui, 2018	China	24	6 (Silicosis)	0.59	0.23	6	0.36	0.03
Chen, 2009	Japan	5M	16 (SAMP6)	295.9	34.7	16 (SAMR1)	268.6	29.7
		12M	16 (SAMP6)	302.5	37.1	16 (SAMR1)	274.1	30.8
Noor, 2014	Indonesia	4	10	1.364	0.002	10	0.377	0.003
		8	10	0.525	0			
相对体积比 (BV/TV)%								
Lumbar								
			Test group (T)			**Control group (C)**		
Study	**Country**	**Time (Weeks)**	**Sample**	**Mean**	**SD**	**Sample**	**Mean**	**SD**
Cui, 2016	China	9	10 (OVX+GC)	49.29	3.32			

		12	10 (OVX+GC)	49.59	3.8			
Wu, 2007	China	12	4	59.18	18.29	8	66.37	5.91
		52	8	56.34	7.42			
Fang, 2005	China	12	10	24.90	2.42	10	25.31	2.31
		24	10	14.59	1.53	10	25.16	2.28
Lin, 2020	China	0				32	36	3.8
		2	24 (GC)	32	3.1	32	38	4.0
		4	24 (GC)	27	2.3	32	37	3.6
		8	24 (GC)	34	3.6	32	38	3.9
Oheim, 2012	Germany	24m	2 (HPD+OVX)	17.22	0.84	1	33.40	5.19
			2 (OVX)	30.89	7.26			
Chen, 2009	Japan	5M	16 (SAMP6)	11.06	1.59	16 (SAMR1)	18.24	2.19
		12M	16 (SAMP6)	11.27	1.49	16 (SAMR1)	18.71	2.26
Goldhahn, 2005	Germany	40	7	17.8	3.9	7	26.3	13.9
Oheim, 2011	Germany	12	4 (CSF+OVX)	33.6	4.6	4	35.2	3.2
			4 (Leptin LV+ovx)	27.2	3.2			
			4 (Leptin TV+ovx)	39.4	5.5			
Kurth, 2001	Germany	4	15	33.78	11.3	15	48.23	5.95
Eschler, 2005	Germany	5m	12	34.72	2.54	12	28, 83	2.29
Iliac Crest								
			Test group (T)			**Control group (C)**		
Study	**Country**	**Time (Weeks)**	**Sample**	**Mean**	**SD**	**Sample**	**Mean**	**SD**
Goldhahn, 2005	Germany	40	7	10.6	2.6	7	16.7	2.4
Oheim, 2011	Germany	12	4 (CSF+OVX)	18.9	2.4	4	22.7	1.3
			4 (Leptin LV+ovx)	12.4	2.6			
			4 (Leptin TV+ovx)	17.7	1.2			
Fini, 2000	Italy	0	6	34.58	2.28			
		12	6	26.85	1.69	6	35.97	3.39
		24	6	26.1	4.15	6	34.88	3.1
Femur								
			Test group (T)			**Control group (C)**		

Study	Country	Time (Weeks)	Sample	Mean	SD	Sample	Mean	SD
Zhang, 2008	China	12	8	24.5	4.6	8	32.5	4.1
Luo, 2017	China	6	18	6.27	3.05	18	18.75	2.98
Xu, 2020	China	4	10	23.98	3.4	10	30.81	1.89
		6	10	21.56	4.18	10	30.73	2.48
Wu, 2007	China	12	4	51.59	14.06	8	65.35	8.95
		52	8	38.16	12.54			
Lin, 2020	China	0				32	38	4.6
		2	24 (GC)	33	3.1	32	40	4.4
		4	24 (GC)	27	2.8	32	43	4.2
		8	24 (GC)	36	3.2	32	42	4.5
Wu, 2014	China	8	20 (CIA)	0.07	0.05	12	0.35	0.06
		16	20 (CIA)	0.02	0.01	12	0.25	0.03
Chen, 2009	Japan	5M	16 (SAMP6)	17.26	2.27	16 (SAMR1)	20.47	2.68
		12M	16 (SAMP6)	17.54	1.96	16 (SAMR1)	20.62	2.51
Tibia								
			Test group (T)			**Control group (C)**		
Study	**Country**	**Time (Weeks)**	**Sample**	**Mean**	**SD**	**Sample**	**Mean**	**SD**
Stendig-Lindberg, 2014	Germany	52	8 (200ppm Mg)	11.0	5.36	8 (2000ppm Mg)	14.6	4.8
Chen, 2009	Japan	5M	16 (SAMP6)	12.77	1.55	16 (SAMR1)	15.75	1.88
		12M	16 (SAMP6)	12.48	1.62	16 (SAMR1)	14.96	1.70
Noor, 2014	Indonesia	4	10	0.411	0.004	10	0.674	0.001
		8	10	0.646	0.001			
Tb.N ((mm-1)								
Lumbar								
			Test group (T)			**Control group (C)**		
Study	**Country**	**Time (Weeks)**	**Sample**	**Mean**	**SD**	**Sample**	**Mean**	**SD**
Sun, 2017	China	2	20 (L)	1.24	0.24	20	1.31	0.21
			20 (M)	0.62	0.16			
			14 (H)	1.16	0.23			
Cui, 2016	China	9	10 (OVX+GC)	1.74	0.1	10 (OVX)	2.17	0.08

		12	10 (OVX+GC)	1.64	0.09	10 (OVX)	1.85	0.06
Wu, 2007	China	12	4	2.04	0.15	8	2.20	0.23
		52	8	1.92	0.22			
Wang, 2012	China	12	8	2.47	0.16	8	2.83	0.18
Fang, 2005	China	12	10	2.43	0.22	10	2.48	0.21
		24	10	1.54	0.19	10	2.51	0.18
Wu, 1990	USA	14	6 (lo-Ca)	0.33	0.08	4	0.38	0.09
Lin, 2020	China	0				32	2.97	0.32
		2	24 (GC)	2.72	0.28	32	2.97	0.31
		4	24 (GC)	2.57	0.25	32	3.05	0.34
		8	24 (GC)	2.83	0.31	32	3.05	0.33
Oheim, 2012	Germany	24m	2 (HPD+OVX)	1.25	0.27	1	1.93	0.13
			2 (OVX)	2.08	0.12			
Chen, 2009	Japan	5M	16 (SAMP6)	4.37	0.48	16 (SAMR1)	5.48	0.63
		12M	16 (SAMP6)	4.19	0.47	16 (SAMR1)	5.22	0.59
Goldhahn, 2005	Germany	40	7	1.52	0.26	7	1.67	0.24
Eschler, 2005	Germany	5m	12	1.56	0.05	12	1.65	0.12
Iliac Crest								
			Test group (T)			**Control group (C)**		
Study	**Country**	**Time (Weeks)**	**Sample**	**Mean**	**SD**	**Sample**	**Mean**	**SD**
Goldhahn, 2005	Germany	40	7	1.3	0.17	7	1.65	0.3
Fini, 2000	Italy	0	6	2.29	0.47			
		12	6	2.32	0.14	6	2.37	0.55
		24	6	2.42	0.55	6	2.46	0.39
Femur								
			Test group (T)			**Control group (C)**		
Study	**Country**	**Time (Weeks)**	**Sample**	**Mean**	**SD**	**Sample**	**Mean**	**SD**
Zhang, 2008	China	12	8	1.62	0.38	8	2.28	0.41
Luo, 2017	China	6	18	**2.01**	**0.3**	**18**	**4.52**	**0.7**
Xu, 2020	China	4	10	3.78	0.51	10	4.92	0.42
		6	10	4.45	0.15	10	4.9	0.52

Wu, 2007	China	12	4	1.83	0.20	8	1.96	0.17
		52	8	1.68	0.15			
Wu, 1990	USA	14	6 (lo-Ca)	1.05	0.38	4	1.07	0.26
Lin, 2020	China	0				32	3.93	0.36
		2	24 (GC)	3.56	0.33	32	3.97	0.37
		4	24 (GC)	3.42	0.25	32	4.13	0.34
		8	24 (GC)	3.83	0.28	32	4.12	0.37
Wu, 2014	China	8	20 (CIA)	1.46	0.80	12	4.33	0.42
		16	20 (CIA)	0.31	0.20	12	2.99	0.32
Hui, 2018	China	24	6 (Silicosis)	0.74	0.16	6	1.20	0.06
Chen, 2009	Japan	5M	16 (SAMP6)	4.20	0.48	16 (SAMR1)	4.76	0.59
		12M	16 (SAMP6)	4.15	0.48	16 (SAMR1)	4.69	5.23
Kurth, 2001	Germany	4	15	2.79	1.03	15	3.69	0.51
Tibia								
			Test group (T)			**Control group (C)**		
Study	**Country**	**Time (Weeks)**	**Sample**	**Mean**	**SD**	**Sample**	**Mean**	**SD**
Tang, 2019	China	5	6	4.17	0.22	6	6.23	0.59
Hui, 2018	China	24	6 (Silicosis)	1.07	0.36	6	1.83	0.22
Chen, 2009	Japan	5M	16 (SAMP6)	3.82	0.44	16 (SAMR1)	4.46	0.52
		12M	16 (SAMP6)	3.74	0.43	16 (SAMR1)	4.37	0.58
Noor, 2014	Indonesia	4	10	234.391	0.165	10	538.535	0.475
		8	10	385.863	1.478			
Conn.D (1/m³)								
Femur								
			Test group (T)			**Control group (C)**		
Study	**Country**	**Time (Weeks)**	**Sample**	**Mean**	**SD**	**Sample**	**Mean**	**SD**
Zhang, 2008	China	12	8	4.64	0.65	8	8.09	0.75
Wu, 2014	China	8	20 (CIA)	32.0	29.9	12	139.7	24.0
		16	20 (CIA)	2.7	1.9	12	70.9	12.5
BS/BV (1/mm)								
Lumbar								

			Test group (T)			Control group (C)		
Study	**Country**	**Time (Weeks)**	**Sample**	**Mean**	**SD**	**Sample**	**Mean**	**SD**
Wu, 2007	China	12	4	6.33	1.57	8	5.81	0.91
		52	8	7.72	2.04			
Lin, 2020	China	0				32	8.9	1.2
		2	24 (GC)	10.4	1.3	32	8.8	1.2
		4	24 (GC)	10.8	1.2	32	8.9	1.2
		8	24 (GC)	9.4	1.1	32	8.9	1.3
Goldhahn, 2005	Germany	40	7	17.4	2.4	7	**14.4**	**4.7**
Iliac Crest								
			Test group (T)			Control group (C)		
Study	**Country**	**Time (Weeks)**	**Sample**	**Mean**	**SD**	**Sample**	**Mean**	**SD**
Goldhahn, 2005	Germany	40	7	25.4	4.3	7	20.1	4
Femur								
			Test group (T)			Control group (C)		
Study	**Country**	**Time (Weeks)**	**Sample**	**Mean**	**SD**	**Sample**	**Mean**	**SD**
Luo, 2017	China	6	18	36.35	3.08	18	25.84	3.12
Wu, 2007	China	12	4	8.63	2.07	8	7.02	1.71
		52	8	10.68	1.70			
Lin, 2020	China	0				32	10.4	1.2
		2	24 (GC)	11.7	1.1	32	10.0	1.3
		4	24 (GC)	11.9	1.3	32	10.2	1.4
		8	24 (GC)	10.9	1.1	32	10.4	1.2
Kurth, 2001	Germany	4	15	6.66	1.72	15	8.41	0.643
SMI structure model index								
Femur								
			Test group (T)			Control group (C)		
Study	**Country**	**Time (Weeks)**	**Sample**	**Mean**	**SD**	**Sample**	**Mean**	**SD**
Wu, 2014	China	8	20 (CIA)	2.98	0.42	12	0.68	0.32
		16	20 (CIA)	3.49	0.57	12	1.19	0.18
Hui, 2018	China	24	6 (Silicosis)	2.31	0.20	6	2.11	0.13

Chen, 2009	Japan	5M	16 (SAMP6)	1.66	0.23	16 (SAMR1)	1.43	0.18
		12M	16 (SAMP6)	1.71	0.22	16 (SAMR1)	1.59	0.20
Tibia								
			Test group (T)			**Control group (C)**		
Study	**Country**	**Time (Weeks)**	**Sample**	**Mean**	**SD**	**Sample**	**Mean**	**SD**
Hui, 2018	China	24	6 (Silicosis)	2.23	0.20	6	1.88	0.18
Chen, 2009	Japan	5M	16 (SAMP6)	1.68	0.22	16 (SAMR1)	1.57	0.24
		12M	16 (SAMP6)	1.84	0.27	16 (SAMR1)	1.71	0.24
Huang, 2016	Hong Kong	36	9 (crp/db/m)	2.08	0.64	9 (db/m)	2.49	0.84
			9 (crp/db/db)	2.27	0.52	9 (db/db)	2.41	0.92
Lumbar								
			Test group (T)			**Control group (C)**		
Study	**Country**	**Time (Weeks)**	**Sample**	**Mean**	**SD**	**Sample**	**Mean**	**SD**
Chen, 2009	Japan	5M	16 (SAMP6)	1.87	0.26	16 (SAMR1)	1.76	0.23
		12M	16 (SAMP6)	2.34	0.30	16 (SAMR1)	2.01	0.27
Goldhahn, 2005	Germany	40	7	0.37	0.34	7	-0.39	1.47
Eschler, 2005	Germany	5m	12	0.15	0.03	12	0.14	0.12
Huang, 2016	Hong Kong	36	9 (crp/db/m)	1.67	0.61	9 (db/m)	2	0.81
			9 (crp/db/db)	0.89	1.67	9 (db/db)	1.2	1.16
Trabecular pattern factor TBPf								
Femur								
			Test group (T)			**Control group (C)**		
Study	**Country**	**Time (Weeks)**	**Sample**	**Mean**	**SD**	**Sample**	**Mean**	**SD**
Hui, 2018	China	24	6 (Silicosis)	12.9	2.23	6	10.92	1.59
Stendig-Lindberg, 2014	Germany	52	8 (200ppm Mg)	8.4	4.2	8 (2000ppm Mg)	6.6	4.0
Chen, 2009	Japan	5M	16 (SAMP6)	5.74	0.66	16 (SAMR1)	4.84	0.58
		12M	16 (SAMP6)	5.86	0.69	16 (SAMR1)	5.12	0.57
Tibia								
			Test group (T)			**Control group (C)**		
Study	**Country**	**Time (Weeks)**	**Sample**	**Mean**	**SD**	**Sample**	**Mean**	**SD**
Hui, 2018	China	24	6 (Silicosis)	11.09	2.13	6		

Chen, 2009	Japan	5M	16 (SAMP6)	5.83	0.67	16 (SAMR1)		
		12M	16 (SAMP6)	5.89	0.66	16 (SAMR1)		

Table 4: BMC.

Lumbar								
			Test group (T)			**Control group (C)**		
Author/year	**Country**	**Time (Weeks)**	**Sample**	**follow-up**		**Sample**	**follow-up**	
				Mean	**SD**		**Mean**	**SD**
Zhang, 2008	China	12	8	2.764	0.321	8	3.727	0.467
Qiao, 2009	China	8	20	0.3663	0.0505	20	0.3813	0.0377
Dick, 1996	Australia	0	18	0.625	0.069	18	0.61	0.054
		6	18	0.578	0.08	18	0.596	0.061
Femur								
			Test group (T)			**Control group (C)**		
Author/year	**Country**	**Time (Weeks)**	**Sample**	**follow-up**		**Sample**	**follow-up**	
				Mean	**SD**		**Mean**	**SD**
Huang, 2017	China	12	10	0.6	0.04	10	0.85	0.03
Chen, 2004	China	16	11	51.9	8.7	10	82.3	11.5
Zhang, 1998	China	12	15 (M-DEX)	0.1698	0.024	15 (L-DEX)	0.2119	0.0215
Li, 2015	China	12	10 (OVX+corticol)	1.0660	0.1476	10	1.6430	0.3371
			10 (OVX)	1.1320	0.1807			
Kurth, 2001	Germany	4	15	52.2	12.1	15	70.2	9.1
Kurth, 2001	Germany	4	15	24.6	7.9	15	35.4	5.8
Dick, 1996	Australia	0	18	0.357	0.033	18	0.346	0.033
		6	18	0.327	0.038	18	0.339	0.036
Dick, 1996	Australia	0	18	0.354	0.037	18	0.344	0.03
		6	18	0.331	0.05	18	0.337	0.041
Sevil, 2010	Turkey	8 (Proximal)	6	0.48	0.069	6	0.46	0.103
		8 (Midshaft)	6	0.495	0.042	6	0.466	0.89
		8 (Distal)	6	0.685	0.096	6	0.706	0.114
		8 (Total)	6	2.677	0.259	6	2.67	0.481
		16 (Proximal)	6	0.517	0.137	6	0.525	0.077
		16 (Midshaft)	6	0.564	0.126	6	0.483	0.046
		16 (Distal)	6	0.702	0.182	6	0.693	0.098
		16 (Total)	6	3.063	0.679	6	2.843	0.33
Tibia								
			Test group (T)			**Control group (C)**		
Author/year	**Country**	**Time (Weeks)**	**Sample**	**follow-up**		**Sample**	**follow-up**	
				Mean	**SD**		**Mean**	**SD**
Huang, 2017	China	12	10	0.55	0.04	10	0.78	0.04
Global								
			Test group (T)			**Control group (C)**		
Author/year	**Country**	**Time (Weeks)**	**Sample**	**Mean**	**SD**	**Sample**	**Mean**	**SD**
Sun, 2017	China	8	9 (OVX)	12.70	3.002	10	14.00	2.271
			10 (D-Galactose)	13.55	2.350			
			10 (OVX+D)	11.00	3.267			
Dick, 1996	Australia	0	18	7.87	0.65	18	7.64	0.48
		6	18	7.52	0.63	18	7.44	0.64
Mean femoral volume (cm^3)								

			Test group (T)			Control group (C)		
Author/year	Country	Time (Weeks)	Sample	Mean	SD	Sample	Mean	SD
Zhang, 1998	China	12	15 (M-DEX)	0.0751	0.0077	15 (L-DEX)	0.0778	0.0057
Bone ash (mg)								
				Test group (T)			Control group (C)	
Study	Country	Time (Weeks)	location	Sample	Mean	SD	Sample	Mean
Liu, 2004	China	5	T7-L3	10 (DEX)	640.5	60.0	10 (Ⅰ)	695.2
		5		20 (RA)	601.8	72.6	10 (Ⅱ)	728.5
Tian, 2007	China	12	Tibia	11	46.34	4.49	11	52.24
				11	74.40	6.90		84.34
Sun, 2004	China	8	Femur	7	0.254	0.007	7	0.305
Bone Ca (mg/g)								
				Test group (T)			Control group (C)	
Study	Country	Time (Weeks)	location	Sample	Mean	SD	Sample	Mean
Tian, 2007	China	12	Tibia	11	253.80	18.61	11	297.00
Sun, 2004	China	8	Femur	7	184.7	1.80	7	200.3
Bone P (mg/g)								
				Test group (T)			Control group (C)	
Study	Country	Time (Weeks)	location	Sample	Mean	SD	Sample	Mean
Tian, 2007	China	12	Tibia	11	502.30	15.50	11	514.60
Sun, 2004	China	8	Femur	7	159.4	3.30	7	169.4
BA - bone area								
				Test group (T)			Control group (C)	
Study	Country	location	Time (Weeks)	Sample	Mean	SD	Sample	Mean
Sevil, 2010	Turkey	**Femur**	8 (Proximal)	6	2.387	0.215	6	1.962
			8 (Midshaft)	6	1.738	0.094	6	1.962
			8 (Distal)	6	2.445	0.133	6	2.393
			8 (Total)	6	10.289	0.659	6	9.574
			16 (Proximal)	6	3.061	0.409	6	2.351
			16 (Midshaft)	6	2.153	0.244	6	1.579
			16 (Distal)	6	2.853	0.325	6	2.283
			16 (Total)	6	13.258	1.485	6	9.995

Table 5: weight.

			Test group (T)			Control group (C)		
Author/year	Country	Time (Weeks)	Sample	Mean	SD	Sample	Mean	SD
Qiao, 2009	China	8	20	358.7	37.63	20	326.9	33.74
Tang, 2019	China	0	12	336	27.3	16	328.22	20.2
		3d		320.92	21.9		330.7	20.2
		7d		315.02	20.8		334.7	18.7
		10d		310.22	24.6		339.9	18
		14d		327.5	20.7		343.8	17.8
		21d		338.5	21.3		355.3	20.4
Gong, 2008	China	0	8 (OVX+Lo.Ca)	2.35	0.15	8 (OVX)	2.30	0.44
		4	8	2.75	0.27	8	2.55	0.28
		8	8	3.35	0.31	8	2.88	0.5
		12	8	3.50	0.19	8	3.44	0.37
He, 2019	China	0	10	230.55	8.86	10	235.46	11.92

		8	10	255.93	15.00	10	322.07	32.36
Tian, 2007	China	0	11	341.7	14.6	11	330.5	15.6
		12	11	379.0	16.2	11	378.4	11.5
Sun, 2017	China	2	20 (L)	274.2	1.8	20	320.3	1.1
			20 (M)	248.9	2.6			
			14 (H)	260.7	2.9			
Li, 2015	China	0	16 (OVX+corticol)	239.00	8.69	16 (OVX)	241.33	7.55
		2	16 (OVX+corticol)	252.67	11.66	16 (OVX)	259.50	9.09
		4	10 (OVX+corticol)	250.17	8.18	10 (OVX)	274.00	10.35
		6	10 (OVX+corticol)	267.17	8.75	10 (OVX)	292.00	9.63
		8	10 (OVX+corticol)	281.83	8.73	10 (OVX)	311.00	9.54
		10	10 (OVX+corticol)	305.00	11.10	10 (OVX)	327.67	4.93
LEE, 2002	Canada	0	12 (OVX+E2+BaP/DMBA)	283	19	12 (OVX+E2)	278	16
		16	12 (OVX+E2+BaP/DMBA)	317	23	12 (OVX+E2)	310	19
Chen, 2009	Japan	5M	16 (SAMP6)	34.0	4.8	16 (SAMR1)	32.2	4.7
		12M	16 (SAMP6)	33.4	4.9	16 (SAMR1)	35.7	5.2
Sevil, 2010	Turkey	0	6	3119	267.8	6	2988	297.33
		8	6	3221	423.85	6	3217	412.1
		0	6	3272	384.63	6	3250	740.44
		16	6	3613	740.8	6	3656	694.2

Table 6: Blood and urine biochemical indications.

S-Ca (mmol/L)								
			Test group (T)			Control group (C)		
Study	**Country**	**Time (Weeks)**	**Sample**	**Mean**	**SD**	**Sample**	**Mean**	**SD**
Han, 2001	China	6	10	2.38	0.2	10	2.07	0.13
		12	10	2.48	0.23	10	2.03	0.13
Liu, 2004	China	5	10 (DEX)	9.93	1.96	10 (Ⅰ)	10.20	2.36
		5	20 (RA)	7.75	1.03	10 (Ⅱ)	11.24	2.58
Lu, 2003	China	8	8	2.14	0.49	8	2.21	0.21
Liu, 2005	China	0	8	2.22	0.13	2	2.23	0.03
		16	8	1.96	0.07	2	2.26	0.04
Gong, 2008	China	0	8 (OVX+Lo.Ca)	3.20	0.10	8 (OVX)	3.18	0.16
		2	8	3.32	0.18	8	3.37	0.19
		4	8	3.22	0.23	8	3.09	0.25
		6	8 (OVX+Lo.Ca)	3.11	0.28	8 (OVX)	3.04	0.21
		8	8	3.98	0.18	8	3.17	0.33
		10	8	3.74	0.56	8	3.26	0.48
		12	8	3.66	0.19	8	3.57	0.55
Shan, 2016	China	12	10 (RA)	2.71	0.31	10	2.25	0.21
			10 (D-galactose)	1.87	0.21			
			10 (PS)	1.79	0.34			
			10 (GC)	1.92	0.27			
Sun, 2017	China	2	20 (L)	1.87	0.21	20	2.01	0.25
			20 (M)	1.16	0.37			
			14 (H)	1.64	0.35			
Wang, 2012	China	0	8	2.49	0.28	8	2.53	0.15
		4	8	2.56	0.16	8	2.54	0.18
		8	8	2.51	0.16	8	2.56	0.20
		12	8	2.54	0.19	8	2.53	0.15

Zeng, 1999	China	13	10	2.795	0.152	10	2.719	0.160
Jia, 2012	China	4	10	2.64	0.20	10	2.70	0.18
Schulz, 2017	Germany	0	29 (prednisolone)	2.027	0.385	8	2.266	0.440
		6	29 (prednisolone)	1.993	0.439	8	2.396	0.086
		9	29 (prednisolone)	2.128	0.378	8	1.368	0.381
Noor, 2014	Indonesia	4	10	82.82	5.77	10	83.08	7.17
		8	10	85.17	2.34			
S-P (mmol/L)								
			Test group (T)			**Control group (C)**		
Study	**Country**	**Time (Weeks)**	**Sample**	**Mean**	**SD**	**Sample**	**Mean**	**SD**
Han, 2001	China	6	10	1.42	0.22	10	1.4	0.21
		12	10	1.45	0.25	10	1.41	0.28
Liu, 2004	China	5	10 (DEX)	7.31	1.03	10 (Ⅰ)	7.02	0.92
		5	20 (RA)	8.06	1.00	10 (Ⅱ)	6.84	1.08
Lu, 2003	China	8	8	2.06	0.63	8	2.31	0.65
Liu, 2005	China	0	8	1.49	0.09	2	1.40	0.05
		16	8	1.76	0.06	2	1.59	0.07
Gong, 2008	China	0	8 (OVX+Lo.Ca)	2.23	0.15	8 (OVX)	2.34	0.19
		2	8	2.71	0.26	8	2.48	0.29
		4	8	2.97	0.37	8	2.47	0.31
		6	8 (OVX+Lo.Ca)	1.62	0.14	8 (OVX)	1.99	0.28
		8	8	1.08	0.11	8	1.65	0.19
		10	8	1.07	0.20	8	1.38	0.14
		12	8	1.04	0.26	8	1.12	0.26
Shan, 2016	China	12	10 (RA)	2.94	0.29	10	2.36	0.34
			10 (D-galactose)	1.69	0.21			
			10 (PS)	1.81	0.21			
			10 (GC)	1.97	0.19			
Wang, 2012	China	0	8	1.24	0.17	8	1.35	0.19
		4	8	1.48	0.25	8	1.30	0.15
		8	8	1.50	0.13	8	1.28	0.18
		12	8	1.63	0.19	8	1.29	0.14
Zeng, 1999	China	13	10	1.829	0.243	10	1.817	0.175
Jia, 2012	China	4	10	1.47	0.23	10	1.40	0.15
Noor, 2014	Indonesia	4	10	8.33	3.08	10	9.66	3.32
		8	10	8.68	2.9			
Blood alkaline phosphatase-AKP (mmol/L)								
			Test group (T)			**Control group (C)**		
Study	**Country**	**Time (Weeks)**	**Sample**	**Mean**	**SD**	**Sample**	**Mean**	**SD**
Wang, 2012	China	0	8	33.1	38.3	8	21.0	4.1
		4	8	170.3	92.8	8	26.5	7.3
		8	8	223.2	101.1	8	26.3	8.6
		12	8	491.6	245.9	8	26.6	8.7
Zeng, 1999	China	13	10	240.261	53.435	10	174.556	47.437
Han, 2001	China	6	10	2.19	0.34	10	1.79	0.27
		12	10	2.62	0.27	10	1.9	0.35
Liu, 2004	China	5	10 (DEX)	72.5	15.3	10 (Ⅰ)	69.3	12.1
		5	20 (RA)	127.0	29.1	10 (Ⅱ)	64.0	6.0
Gao, 2012	China	1	6	91.34	20.26	6	73.85	13.54
		2	6	98.48	19.78	6	70.52	13.41
		4	6	117.72	22.16	6	67.19	12.78

		6	6	128.91	29.06	6	68.43	14.53
		8	6	131.13	28.59	6	70.89	14.57
		12	6	132.08	31.38	6	74.04	15.72
Chen, 2007	China	No clear	6 (7w)	359.1	24.04	6	109.17	7.9
			6 (13w)	327.77	15.07			
Liu, 2005	China	0	8	7.56	0.66	2	8.66	0.84
		16	8	5.76	0.91	2	6.45	0.54
Gong, 2008	China	0	8 (OVX+Lo.Ca)	125.4	28.6	8 (OVX)	126.9	29.4
		2	8	103.8	19.3	8	108.8	21.6
		4	8	118.5	14.5	8	125.7	18.5
		6	8 (OVX+Lo.Ca)	158.1	10.5	8 (OVX)	135.4	14.6
		8	8	220.6	12.8	8	131.4	33.6
		10	8	255.1	15.8	8	180.4	14.8
		12	8	211.7	13.3	8	221.2	29.9
Tian, 2007	China	12	11	127.1	43.5	11	132.6	41.5
Shan, 2016	China	12	10 (RA)	134.09	7.14	10	97.04	15.86
			10 (D-galactose)	65.69	5.87			
			10 (PS)	71.27	19.65			
			10 (GC)	74.29	3.54			
Jia, 2012	China	4	10	456.8	26.7	10	365.8	34.5
ACP (u/L)								
			Test group (T)			**Control group (C)**		
Study	**Country**	**Time (Weeks)**	**Sample**	**Mean**	**SD**	**Sample**	**Mean**	**SD**
Chen, 2007	China	No clear	6 (7w)	9.5	1.52	6	4.33	1.37
			6 (13w)	11.83	1.6			
Liu, 2005	China	0	8	127.0	31.0	2	66.9	11.0
		16	8	472.0	63.0	2	92.0	24.0
Ca/Cr (mol/mol)								
			Test group (T)			**Control group (C)**		
Study	**Country**	**Time (Weeks)**	**Sample**	**Mean**	**SD**	**Sample**	**Mean**	**SD**
Han, 2001	China	6	10	2.56	0.42	10	2	0.51
		12	10	2.74	0.33	10	1.96	0.38
Lu, 2003	China	8	8	1.88	0.66[2]	8	0.18	0.14
P/Cr (mol/mol)								
			试验组 (T)			**对照组 (C)**		
Study	**Country**	**Time (Weeks)**	**样本量 (Sample)**	**均数 (Mean)**	**标准差 (SD)**	**样本量 (Sample)**	**均数 (Mean)**	**标准差 (SD)**
Han, 2001	China	6	10	3.02	1.42	10	2.85	1.77
		12	10	3.11	1.02	10	2.89	1.31
Lu, 2003	China	8	8	3.87	0.83[2]	8	0.34	0.20
HOP/Cr (mol/mol)								
			Test group (T)			**Control group (C)**		
Study	**Country**	**Time (Weeks)**	**Sample**	**Mean**	**SD**	**Sample**	**Mean**	**SD**
Han, 2001	China	6	10	0.15	0.02	10	0.1	0.02
		12	10	0.15	0.02	10	0.1	0.03
Lu, 2003	China	8	8	15.67	2.49[2]	8	9.74	3.92
Gao, 2012	China	1	6	18.11	4.47	6	14.87	3.59
		2	6	18.85	4.14	6	14.37	3.93
		4	6	21.86	4.52	6	14.29	3.37
		6	6	23.79	4.81	6	14.05	3.58

		8	6	25.15	5.18	6	13.76	3.01
		12	6	26.31	6.28	6	13.05	3.74
ALT (U/L)								
			Test group (T)			**Control group (C)**		
Study	**Country**	**Time (Weeks)**	**Sample**	**Mean**	**SD**	**Sample**	**Mean**	**SD**
Xu, 2020	China	4	10	81.03	21.82	10	41.1	21.19
		6	10	165.03	110.58	10	28.6	7.12
AST (U/L)								
			Test group (T)			**Control group (C)**		
Study	**Country**	**Time (Weeks)**	**Sample**	**Mean**	**SD**	**Sample**	**Mean**	**SD**
Xu, 2020	China	4	10	317.73	98.69	10	212.13	58.51
		6	10	‘599.00	98.34	10	209.77	61.39
Serum hyaluronidase (μg/L)								
			Test group (T)			**Control group (C)**		
Study	**Country**	**Time (Weeks)**	**Sample**	**Mean**	**SD**	**Sample**	**Mean**	**SD**
Xu, 2020	China	4	10	1368.48	1093.82	10	108.79	17.69
		6	10	1690.43	619.15	10	135.99	16.87
Serum type IV collagen (μg/L)								
			Test group (T)			**Control group (C)**		
Study	**Country**	**Time (Weeks)**	**Sample**	**Mean**	**SD**	**Sample**	**Mean**	**SD**
Xu, 2020	China	4	10	19.81	0.42	10	19.35	0.34
		6	10	20.51	1.18	10	19.06	0.38
Serum estradiol E2 (ng/L)								
			Test group (T)			**Control group (C)**		
Study	**Country**	**Time (Weeks)**	**Sample**	**Mean**	**SD**	**Sample**	**Mean**	**SD**
Liu, 2004	China	5	10 (DEX)	90.4	23.6	10 (Ⅰ)	123.3	18.5
		5	20 (RA)	88.0	19.2	10 (Ⅱ)	127.7	16.8
Zhang, 2003	China	8	10 (OVX)	4.620	0.51	10	35.905	5.36
			10 (DM)	28.800	4.06			
			10 (OVX+DM)	3.180	0.44			
Zhen, 2009	China	12	8	0.033	0.008	8	0.057	0.023
		24	8	0.025	0.006	8	0.050	0.018
Li, 2015	China	12	10 (OVX+corticol)	49.71	4.08	10	57.56	1.69
			10 (OVX)	55.30	1.83			
Jia, 2012	China	4	10	86.0	10.9	10	124.7	12.6
testosterone T (nmol/L)								
			Test group (T)			**Control group (C)**		
Study	**Country**	**Time (Weeks)**	**Sample**	**Mean**	**SD**	**Sample**	**Mean**	**SD**
Zhen, 2009	China	12	8	2.276	0.217	8	2.032	0.346
		24	8	2.646	0.309	8	1.955	0.332
Li, 2015	China	12	10 (OVX+corticol)	2.28	0.22	10	2.16	0.18
			10 (OVX)	1.81	0.24			
E2/T								
			Test group (T)			**Control group (C)**		
Study	**Country**	**Time (Weeks)**	**Sample**	**Mean**	**SD**	**Sample**	**Mean**	**SD**
Zhen, 2009	China	12	8	0.014	0.005	8	0.028	0.009
		24	8	0.009	0.003	8	0.026	0.008
Thyrotropine 3-T3 (ng/ml)								

			试验组 (T)			对照组 (C)		
Study	Country	Time (Weeks)	样本量 (Sample)	均数 (Mean)	标准差 (SD)	样本量 (Sample)	均数 (Mean)	标准差 (SD)
Li, 2015	China	12	10 (OVX+corticol)	42.1	4.82	10	63.67	7.05
			10 (OVX)	48.02	7.85			
Thyrotropine 4-T4 (nmol/L)								
			Test group (T)			Control group (C)		
Study	Country	Time (Weeks)	Sample	Mean	SD	Sample	Mean	SD
Li, 2015	China	12	10 (OVX+corticol)	69.95	4.33	10	78.92	1.26
			10 (OVX)	68.61	5.03			
Intestinal calcium absorption								
			Test group (T)			Control group (C)		
Study	Country	Time (Weeks)	Sample	Mean	SD	Sample	Mean	SD
Liu, 2004	China	5	10 (DEX)	1237	209	10 (Ⅰ)	1595	299
		5	20 (RA)	1194	250	10 (Ⅱ)	1584	229
BGP (μg/L)								
			Test group (T)			Control group (C)		
Study	Country	Time (Weeks)	Sample	Mean	SD	Sample	Mean	SD
Lu, 2003	China	8	8	0.87	0.24[2]	8	1.31	0.31
Gao, 2012	China	1	6	2.471	0.579	6	4.046	1.115
		2	6	1.852	'0.320	6	3.726	1.042
		4	6	1.289	0.269	6	3.805	1.175
		6	6	1.212	0.311	6	3.527	1.791
		8	6	1.172	0.283	6	3.624	1.232
		12	6	1.185	0.256	6	3.818	1.243
Chen, 2007	China	No clear	6 (7w)	25.17	0.82	6	24.67	0.7
			6 (13w)	22.57	1.31			
Li, 1998	China	0	5	3.1787	2.3826	5	4.1	1.8621
		13	5	2.878	1.5187			
		26	5	2.14	1.0816			
Shan, 2016	China	12	10 (RA)	1406.53	179.39	10	2336.07	143.26
			10 (D-galactose)	1526.32	99.25			
			10 (PS)	1608.24	104.48			
			10 (GC)	1547.36	124.39			
Fang, 2005	China	0	10	28.30	2.03	10	28.13	1.85
		12	10	36.54	1.93	10	27.95	2.07
		24	10	39.21	2.15	10	28.61	1.94
Tartrate resistant acid phosphatase-STRAP (U/L)								
			Test group (T)			Control group (C)		
Study	Country	Time (Weeks)	Sample	Mean	SD	Sample	Mean	SD
Gao, 2012	China	1	6	10.15	3.39	6	6.96	2.28
		2	6	11.82	3.24	6	7.18	2.52
		4	6	14.59	3.15	6	7.80	2.93
		6	6	15.92	4.28	6	7.91	3.21
		8	6	16.15	4.73	6	8.04	3.06
		12	6	16.51	4.87	6	8.22	3.76
Shan, 2016	China	12	10 (RA)	369.29	25.75	10	307.62	31.26
			10 (D-galactose)	359.25	36.87			
			10 (PS)	378.32	19.64			
			10 (GC)	397.25	5.47			

Fang, 2005	China	0	10	4.1	0.18	10	4.5	0.25
		12	10	6.5	0.24	10	4.2	0.27
		24	10	8.6	0.19	10	4.3	0.18
Jia, 2012	China	4	10	90.56	14.22	10	73.46	10.76
Bone alkaline phosphatase-sALP (U/L)								
			Test group (T)			**Control group (C)**		
Study	**Country**	**Time (Weeks)**	**Sample**	**Mean**	**SD**	**Sample**	**Mean**	**SD**
Fang, 2005	China	0	10	10.3	1.35	10	10.8	0.94
		12	10	15.2	1.65	10	11.2	1.23
		24	10	18.4	1.04	10	10.4	1.15
blood sugar (mmol/L)								
			Test group (T)			**Control group (C)**		
Study	**Country**	**Time (Weeks)**	**Sample**	**Mean**	**SD**	**Sample**	**Mean**	**SD**
Tang, 2019	China	0	12	4.7	0.47	16	4.6	0.4
		3d		23.0	4.4		4.7	0.2
		7d		19.4	3.3		4.7	0.2
		10d		19.3	3.3		4.8	0.2
		14d		20.1	4.1		4.7	0.3
		21d		19.1	3.2		4.9	0.2
P1NP								
			Test group (T)			**Control group (C)**		
Study	**Country**	**Time (Weeks)**	**Sample**	**Mean**	**SD**	**Sample**	**Mean**	**SD**
Ye, 2017	China	0	10 (OVX+Fe)	5.87	0.62	10 (OVX)	5.84	0.67
		4	10 (OVX+Fe)	5.78	0.53	10 (OVX)	5.79	0.62
		8	10 (OVX+Fe)	5.85	0.42	10 (OVX)	5.93	0.44
		12	10 (OVX+Fe)	7.97	0.67	10 (OVX)	7.77	0.64
		16	10 (OVX+Fe)	8.27	0.79	10 (OVX)	7.90	0.40
		20	10 (OVX+Fe)	10.77	1.18	10 (OVX)	9.32	0.49
		24	10 (OVX+Fe)	13.23	0.73	10 (OVX)	10.99	0.75
CTX-1								
			Test group (T)			**Control group (C)**		
Study	**Country**	**Time (Weeks)**	**Sample**	**Mean**	**SD**	**Sample**	**Mean**	**SD**
Ye, 2017	China	0	10 (OVX+Fe)	6.73	0.23	10 (OVX)	6.71	0.19
		4	10 (OVX+Fe)	6.54	0.44	10 (OVX)	6.78	0.30
		8	10 (OVX+Fe)	6.76	0.35	10 (OVX)	6.68	0.37
		12	10 (OVX+Fe)	7.44	0.38	10 (OVX)	7.30	0.24
		16	10 (OVX+Fe)	8.41	0.32	10 (OVX)	8.19	0.19
		20	10 (OVX+Fe)	11.86	1.43	10 (OVX)	10.59	0.57
		24	10 (OVX+Fe)	14.78	0.77	10 (OVX)	12.49	0.64
Noor, 2014	Indonesia	4	10	1.077	0.206	10	1.457	0.173
		8	10	1.04	0.066			
IGF-1								
			Test group (T)			**Control group (C)**		
Study	**Country**	**Time (Weeks)**	**Sample**	**Mean**	**SD**	**Sample**	**Mean**	**SD**
Shan, 2016	China	12	10 (RA)	289.14	12.39	10	367, 62	25.23
			10 (D-galactose)	268.51	31.25			
			10 (PS)	274.15	19.86			
			10 (GC)	264.32	27.68			
parathyroid hormone-PTH/ (U/ml)								

			Test group (T)			Control group (C)		
Study	**Country**	**Time (Weeks)**	**Sample**	**Mean**	**SD**	**Sample**	**Mean**	**SD**
Shan, 2016	China	12	10 (RA)	3.26	0.27	10	2.25	0.12
			10 (D-galactose)	3.45	0.29			
			10 (PS)	3.87	0.19			
			10 (GC)	3.37	0.35			
Cui, 1996	China	2	7	35.33	3.01	7	38.86	10.38
		4	7	28.17	4.22	7	52.17	17.31
		8	7	18.10	6.54	7	84.00	51.22
Calcitonin-CT								
			Test group (T)			Control group (C)		
Study	**Country**	**Time (Weeks)**	**Sample**	**Mean**	**SD**	**Sample**	**Mean**	**SD**
Cui, 1996	China	2	7	213.33	21.60	7	251.43	18.64
		4	7	206.67	17.51	7	288.57	73.13
		8	7	205.00	25.88	7	301.43	68.17
AdreNocorticotropic hormone-ACTH (ng/L)								
			Test group (T)			Control group (C)		
Study	**Country**	**Time (Weeks)**	**Sample**	**Mean**	**SD**	**Sample**	**Mean**	**SD**
Chen, 2015	China	8	15 (cortisol)	176.7566	24.8133	15 (s)	253.6142	25.7096
		8	15 (ovx+corticol)	155.3280	22.9311	15 (ovx)	237.9110	36.6993
Xia, 2013	China	12	15 (ovx)	245.32	32.95	15	244.61	35.72
		12	15 (ovx+thyroxine)	275.36	43.84			
Li, 2015	China	12	10 (OVX+corticol)	54.03	3.38	10	65.79	3.70
			10 (OVX)	69.60	3.58			
Corticotropin releasing hormone-CRH (ng/L)								
			Test group (T)			Control group (C)		
Study	**Country**	**Time (Weeks)**	**Sample**	**Mean**	**SD**	**Sample**	**Mean**	**SD**
Xia, 2013	China	12	15 (ovx)	25.12	12.35	15	24.78	15.34
		12	15 (ovx+thyroxine)	65.24	23.87			
Thyroid stimulating hormone-TSH (mIU/L)								
			Test group (T)			Control group (C)		
Study	**Country**	**Time (Weeks)**	**Sample**	**Mean**	**SD**	**Sample**	**Mean**	**SD**
Chen, 2015	China	8	15 (cortisol)	2.1559	0.3484	15 (s)	3.5549	0.4189
		8	15 (ovx+corticol)	1.6830	0.3234	15 (ovx)	3.3406	0.2079
Xia, 2013	China	12	15 (ovx)	8.68	0.54	15	8.76	0.49
		12	15 (ovx+thyroxine)	9.46	0.52			
cAMP (nmol/L)								
			Test group (T)			Control group (C)		
Study	**Country**	**Time (Weeks)**	**Sample**	**Mean**	**SD**	**Sample**	**Mean**	**SD**
Chen, 2015	China	8	15 (cortisol)	25.80	3.53	15 (s)	31.98	3.71
		8	15 (ovx+corticol)	23.80	4.44	15 (ovx)	32.84	4.75
Xia, 2013	China	12	15 (ovx)	29.80	6.61	15	29.48	5.75
		12	15 (ovx+thyroxine)	25.30	6.05			
Li, 2015	China	2	6 (OVX+corticol)	7.10	0.26	6 (OVX)	8.42	0.44
		12	10 (OVX+corticol)	6.74	0.47	10 (OVX)	7.37	0.32
cGMP (nmol/L)								
			Test group (T)			Control group (C)		
Study	**Country**	**Time (Weeks)**	**Sample**	**Mean**	**SD**	**Sample**	**Mean**	**SD**

Chen, 2015	China	8	15 (cortisol)	6.38	1.71	15 (s)	6.06	1.42
		8	15 (ovx+corticol)	6.55	1.93	15 (ovx)	6.04	1.64
Xia, 2013	China	12	15 (ovx)	6.11	1.21	15	6.06	1.41
		12	15 (ovx+thyroxine)	6.43	1.42			
Li, 2015	China	2	6 (OVX+corticol)	30.94	2.17	6 (OVX)	22.82	1.63
		12	10 (OVX+corticol)	20.31	1.46	10 (OVX)	18.78	1.24
cAMP/cGMP								
			Test group (T)			**Control group (C)**		
Study	**Country**	**Time (Weeks)**	**Sample**	**Mean**	**SD**	**Sample**	**Mean**	**SD**
Chen, 2015	China	8	15 (cortisol)	3.77	1.11	15 (s)	5.59	1.67
		8	15 (ovx+corticol)	4.57	1.63	15 (ovx)	5.61	1.88
Xia, 2013	China	12	15 (ovx)	5.51	1.24	15	5.59	1.47
		12	15 (ovx+thyroxine)	5.21	1.55			
Li, 2015	China	2	6 (OVX+corticol)	0.23	0.02	6 (OVX)	0.37	0.01
		12	10 (OVX+corticol)	0.33	0.03	10 (OVX)	0.39	0.04
Free triiodothyronine-FT3 (mIU/L)								
			Test group (T)			**Control group (C)**		
Study	**Country**	**Time (Weeks)**	**Sample**	**Mean**	**SD**	**Sample**	**Mean**	**SD**
Xia, 2013	China	12	15 (ovx)	3.28	0.21	15	3.32	0.19
		12	15 (ovx+thyroxine)	4.61	0.16			
OPG								
			Test group (T)			**Control group (C)**		
Study	**Country**	**Time (Weeks)**	**Sample**	**Mean**	**SD**	**Sample**	**Mean**	**SD**
Xia, 2013	China	12	15 (ovx)	0.5746	0.0465	15	0.6850	0.0500
		12	15 (ovx+thyroxine)	0.5027	0.0381			
Schulz, 2017	Germany	0	29 (prednisolone)	0.286	0.153	8	0.140	0
		6	29 (prednisolone)	0.540	0.622	8	0.14	0
		9	29 (prednisolone)	0.200	0.146	8	0.180	0.019
RANKL								
			Test group (T)			**Control group (C)**		
Study	**Country**	**Time (Weeks)**	**Sample**	**Mean**	**SD**	**Sample**	**Mean**	**SD**
Xia, 2013	China	12	15 (ovx)	0.7040	0.0537	15	0.5448	0.0583
		12	15 (ovx+thyroxine)	0.7537	0.0756			
OPG/RANKL								
			Test group (T)			**Control group (C)**		
Study	**Country**	**Time (Weeks)**	**Sample**	**Mean**	**SD**	**Sample**	**Mean**	**SD**
Xia, 2013	China	12	15 (ovx)	0.7153	0.0673	15	1.1783	0.1442
		12	15 (ovx+thyroxine)	0.6740	0.0421			
$PO4^{2-}$ (mmol/l)								
			Test group (T)			**Control group (C)**		
Study	**Country**	**Time (Weeks)**	**Sample**	**Mean**	**SD**	**Sample**	**Mean**	**SD**
Schulz, 2017	Germany	0	29 (prednisolone)	2.253	0.285	8	**2.008**	**0.541**
		6	29 (prednisolone)	1.716	0.22	8	**1.943**	**0.188**
		9	29 (prednisolone)	1.708	0.365	8	1.95	0.148
AP (µmol/l)								
			Test group (T)			**Control group (C)**		
Study	**Country**	**Time (Weeks)**	**Sample**	**Mean**	**SD**	**Sample**	**Mean**	**SD**
Schulz, 2017	Germany	0	29 (prednisolone)	1.678	1.457	8	0.754	0.161
		6	29 (prednisolone)	0.734	0.483	8	0.776	0.222

		9	29 (prednisolone)	0.807	0.415	8	0.722	0.126
BAP (U/l)								
			Test group (T)			**Control group (C)**		
Study	**Country**	**Time (Weeks)**	**Sample**	**Mean**	**SD**	**Sample**	**Mean**	**SD**
Schulz, 2017	Germany	0	29 (prednisolone)	71.83	63.894	8	16.738	4.194
		6	29 (prednisolone)	23.793	19.95	8	29.588	5.192
		9	29 (prednisolone)	25.33	18.523	8	27.75	2.799
β-Crosslaps (ng/ml)								
			Test group (T)			**Control group (C)**		
Study	**Country**	**Time (Weeks)**	**Sample**	**Mean**	**SD**	**Sample**	**Mean**	**SD**
Schulz, 2017	Germany	0	29 (prednisolone)	0.838	0.215	8	0.385	0.099
		6	29 (prednisolone)	0.499	0.478	8	0.736	0.172
		9	29 (prednisolone)	0.6	0.361	8	0.731	0.081
Osteocalcin (ng/ml)								
			Test group (T)			**Control group (C)**		
Study	**Country**	**Time (Weeks)**	**Sample**	**Mean**	**SD**	**Sample**	**Mean**	**SD**
Schulz, 2017	Germany	0	29 (prednisolone)	121.822	18.591	8	13.125	3.605
		6	29 (prednisolone)	27.563	20.865	8	34.988	7.618
		9	29 (prednisolone)	21.137	19.118	8	19.763	8.833
1, 25 (OH)2D3 (pg/ml)								
			Test group (T)			**Control group (C)**		
Study	**Country**	**Time (Weeks)**	**Sample**	**Mean**	**SD**	**Sample**	**Mean**	**SD**
Schulz, 2017	Germany	0	29 (prednisolone)	87.433	34.082	8	141.625	27.184
		6	29 (prednisolone)	48.633	19.22	8	57.463	16.318
		9	29 (prednisolone)	101.778	35.721	8	143.05	51.234
25 (OH)D3 (ng/ml)								
			Test group (T)			**Control group (C)**		
Study	**Country**	**Time (Weeks)**	**Sample**	**Mean**	**SD**	**Sample**	**Mean**	**SD**
Schulz, 2017	Germany	0	29 (prednisolone)	4.315	0.407	8	7.638	2.744
		6	29 (prednisolone)	4.007	0.038	8	4	0
		9	29 (prednisolone)	4	0	8	5.488	1.75

Table 7: Biomechanical parameters.

Break load (KN)														
			Femur						**metatarsal bone**					
			Test group (T)			**Control group (C)**			**Test group (T)**			**Control group (C)**		
Study	**Country**	**Time (Weeks)**	**Sample**	**Mean**	**SD**	**Sample**	**Mean**	**SD**	**Sample**	**Mean**	**SD**	**Sample**	**Mean**	**SD**
He, 1999	China	0.5y	4	1.4505	0.229				4	14.3	0.94			
		1y	5	1.532	0.1967				5	10.4	0.56			
		1.5y	5	1.9582	0.3978				5	15.2	2.24			
Li, 1998	China	26	5	147.475	53.465	5	258.86	38.9	5	123.7500	21.3600	5	209.3750	51
Fang, 2005	China	12	10	35.89	2.03	10	36.28	3.19						
		24	10	29.84	1.46	10	36.45	2.51						
Guo, 2019	China	8	10 (OVX)	70.09	5.86	10	96.73	5.34						
			10 (OVX+NC)	69.58	7.66									

			10 (OVX + ERK-5 shRNA)	52.11	4.72									
			10 (OVX + ERK-5)	83.76	5.49									
Wu, 2014	China	8	20 (CIA)	180.4	5.3	12	111.0	9.5						
		16	20 (CIA)	113.0	15.6	12	83.2	16.1						

Ultimate strength (Mpa)

			Femur						metatarsal bone					
			Test group (T)			Control group (C)			Test group (T)			Control group (C)		
Study	Country	Time (Weeks)	Sample	Mean	SD	Sample	Mean	SD	Sample	Mean	SD	Sample	Mean	SD
He, 1999	China	0.5y	4	127.943	31.601				4	200	49			
		1y	5	140.774	13.393				5	136	9.43			
		1.5y	5	121.633	22.293				5	144	8.72			
Li, 1998	China	26	5	114.143	39.837	5	142.25	36.5	5	200	22.2	5	288	21
Guo, 2019	China	8	10 (OVX)	134.21	13.52	10	176.43	11.9						
			10 (OVX+NC)	129.76	14.21									
			10 (OVX + ERK-5 shRNA)	108.82	9.83									
			10 (OVX + ERK-5)	155.24	13.32									

Elastic module (Gpa)

			Femur						metatarsal bone					
			Test group (T)			Control group (C)			Test group (T)			Control group (C)		
Study	Country	Time (Weeks)	Sample	Mean	SD	Sample	Mean	SD	Sample	Mean	SD	Sample	Mean	SD
He, 1999	China	0.5y	4	14.3737	3.2809				4	11.9	3.18			
		1y	5	11.0286	2.5682				5	13.1	1.14			
		1.5y	5	10.2024	2.43				5	14.5	1.93			
Li, 1998	China	26	5	7.2530	1.8855	5	16.865	5.1	5	8.18	1.81	5	14.3	1.3
Han, 2001	China	6	10	11.9	1.4	10	12.7	1.3						
		12	10	10.9	1.7	10	12.8	1.6						
Cui, 1996	China	2	7	3169.55	1178.6	7	4190.50	918.70						
		4	7	3649.25	1007.40	7	3479	993.10						
		8	7	3391.25	1385.4	7	3530	1480						
Guo, 2019	China	8	10 (OVX)	4833	121.8	10	5997.10	171.30						
			10 (OVX+NC)	4736.50	153.90									
			10 (OVX + ERK-5 shRNA)	3655.80	131.50									
			10 (OVX + ERK-5)	5367.20	158.40									
Sevil, 2010	Turkey	8	6	11.09	2.09	6	12.98	2.14						
		16	6	10.17	2.64	6	15.84	3.28						

Femur-Maximum radius (mm)

			Test group (T)			Control group (C)								
Study	Country	Time (Week	Sample	Mean	SD	Sample	Mean	SD						

		s)												
Lu, 2003	China	8	8	0.81	0.12	8	0.93	0.07						
Fang, 2005	China	12	10	4.8	0.21	10	4.9	0.24						
		24	10	3.1	0.16	10	4.9	0.23						
Femur-Maximum loads (N)														
			Test group (T)			**Control group (C)**								
Study	**Country**	**Time (Weeks)**	**Sample**	**Mean**	**SD**	**Sample**	**Mean**	**SD**						
Lu, 2003	China	8	8	50.7	7.7[2]	8	74.1	12.7						
Chen, 2007	China	No clear	6 (7w)	13.28	1.19	6	18.3	1.45						
			6 (13w)	9.87	0.52									
Guo, 2019	China	8	10 (OVX)	94.59	5.26	10	117.68	5, 29						
			10 (OVX+NC)	94.83	7.81									
			10 (OVX + ERK-5 shRNA)	80.06	6.45									
			10 (OVX + ERK-5)	105.37	6.30									
Wu, 2014	China	8	20 (CIA)	180.8	4.7	12	116.8	8.3						
		16	20 (CIA)	113.3	15.6	12	84.6	15.3						
Femur-Maximum strain														
			Test group (T)			**Control group (C)**								
Study	**Country**	**Time (Weeks)**	**Sample**	**Mean**	**SD**	**Sample**	**Mean**	**SD**						
Lu, 2003	China	8	8	0.05	0.007[2]	8	0.07	0.01						
Guo, 2019	China	8	10 (OVX)	2.71	0.31	10	5.65	0.56						
			10 (OVX+NC)	2.70	0.25									
			10 (OVX + ERK-5 shRNA)	1.97	0.57									
			10 (OVX + ERK-5)	3.54	0.34									
Femur-Maximum stress (mPa)														
			Test group (T)			**Control group (C)**								
Study	**Country**	**Time (Weeks)**	**Sample**	**Mean**	**SD**	**Sample**	**Mean**	**SD**						
Lu, 2003	China	8	8	58.4	8.4	8	71.7	22.3						
Han, 2001	China	6	10	110	14	10	120	10						
		12	10	100	21	10	114	12						
Cui, 1996	China	2	7	185.10	40.94	7	227.20	67.4						
		4	7	174.23	20.49	7	234.21	39.9						
		8	7	175.78	50.70	7	191.23	58.9						
Sevil, 2010	Turkey	8	6	117.96	23.52	6	136.24	21.4						
		16	6	117.87	34.7	6	185.49	34.3						
Femur-Structural stiffness (N/mm)														
			Test group (T)			**Control group (C)**								
Study	**Country**	**Time (Weeks)**	**Sample**	**Mean**	**SD**	**Sample**	**Mean**	**SD**						
Chen,	China	No	6 (7w)	34.27	2.92	6	53.93	3.04						

2007		clear	6 (13w)	26.92	3.04									
Guo, 2019	China	8	10 (OVX)	160.56	9.18	10	199.57	11.3						
			10 (OVX+NC)	153.80	10.67									
			10 (OVX + ERK-5 shRNA)	112.92	6.59									
			10 (OVX + ERK-5)	177.66	10.84									
Wu, 2014	China	8	20 (CIA)	37578.5	1957.2	12	24782	2052						
		16	20 (CIA)	23708.2	5048.4	12	19670	2123						
Sevil, 2010	Turkey	8	6	433.21	60.61	6	431	71.1						
		16	6	460.07	132.23	6	488.1	73.1						
Lumbar	**ultimate strength (MPa)**													
			Test group (T)			**Control group (C)**								
Study	**Country**	**Time (Weeks)**	**Sample**	**Mean**	**SD**	**Sample**	**Mean**	**SD**						
Wang, 2012	China	12	8	12.57	3.49	8	20.42	3.13						
Cui, 1996	China	2	7	411.69	41.21	7	437.38	69.4						
		4	7	416.13	39.11	7	459.61	14.00						
		8	7	511.52	118.44	7	458.90	21.20						
Lumbar	**Young's modulus (MPa)**													
			Test group (T)			**Control group (C)**								
Study	**Country**	**Time (Weeks)**	**Sample**	**Mean**	**SD**	**Sample**	**Mean**	**SD**						
Wang, 2012	China	12	8	148.39	52.35	8	335.49	31.7						
Cui, 1996	China	2	7	83.27	37.52	7	92.48	15.8						
		4	7	104.75	12.23	7	86.12	15.8						
		8	7	67.48	18.19	7	106.99	20.80						

Table 8: Geometric parameters.

Sagital diameter (mm)														
			Femur						**Tibia**					
			Test group (T)			**Control group (C)**			**Test group (T)**			**Control group (C)**		
Study	**Country**	**Time (Weeks)**	**Sample**	**Mean**	**SD**	**Sample**	**Mean**	**SD**	**Sample**	**Mean**	**SD**	**Sample**	**Mean**	**SD**
He, 1999	China	0.5y	4	16.45	2.3216				4	12.85	1.2715			
		1y	5	16.14	0.838				5	12.48	0.4765			
		1.5y	5	18.584	0.9883				5	13.996	0.7919			
Li, 1998	China	26	5	15.325	0.858	5	15.825	1.632	5	13.85	0.536	5	14.378	0.819
Coronal diameter-冠状径 (mm)														
			股骨 (Femur)						**胫骨 (Tibia)**					
			Test group (T)			**Control group (C)**			**Test group (T)**			**Control group (C)**		
Study	**Country**	**Time (Weeks)**	**Sample**	**Mean**	**SD**	**Sample**	**Mean**	**SD**	**Sample**	**Mean**	**SD**	**Sample**	**Mean**	**SD**
He,	China	0.5y	4	18.07	1.927				4	15.65	1.804			

1999				5	7					6			
		1y	5	17.416	0.7068				5	14.92	0.6723			
		1.5y	5	19.92	1.2598				5	17.56	1.2096			
Li, 1998	China	26	5	16.625	0.708	5	18.35	1.426	5	15.48	0.608	5	16.775	0.761

Thickness of bone (mm)

			Femur						Tibia					
			Test group （T）			Control group （C）			Test group （T）			Control group （C）		
Study	**Country**	**Time (Weeks)**	**Sample**	**Mean**	**SD**	**Sample**	**Mean**	**SD**	**Sample**	**Mean**	**SD**	**Sample**	**Mean**	**SD**
He, 1999	China	0.5y	4	2.045	0.3255				4	2.865	0.2275			
		1y	5	2.105	0.3621				5	2.674	0.384			
		1.5y	5	2.608	0.1464				5	3.313	0.2309			
Li, 1998	China	26	5	1.7188	0.403	5	2.4143	0.14	5	2.3594	0.205	5	3.0319	0.104
Wu, 2007	China	12	4	1.85	0.05	8	1.9	0.08						
		52	8	1.78	0.05									

Density of bone (mm)

			Femur						Tibia					
			Test group （T）			Control group （C）			Test group （T）			Control group （C）		
Study	**Country**	**Time (Weeks)**	**Sample**	**Mean**	**SD**	**Sample**	**Mean**	**SD**	**Sample**	**Mean**	**SD**	**Sample**	**Mean**	**SD**
He, 1999	China	0.5y	4	2.0102	0.0087				4	2.0203	0.0062			
		1y	5	2.003	0.0263				5	1.9921	0.0092			
		1.5y	5	1.9933	0.0062				5	1.9921	0.0094			
Li, 1998	China	26	5	1.9709	0.019	5	2.0953	0.027	5	1.986	0.021	5	2.0802	0.053