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3

= Abstract =

Osteoarthritis and bone mineral density among women
- Korean national health and nutrition examination survey in Kuri-

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420 women from Kuri Korean national health and nutrition examination survey were studied to examine the hypothesis that osteoarthritis and bone mineral density are inversely related. Total 420 women had radiographs of the hands, knees, and hip. Also all women had bone mineral density measured at right heel. Mean bone mineral densities were compared between no osteoarthritis and osteoarthritis group. In order to adjust the effect of possible confoundings(age, parity, BMI, menstruation history, bioimpedance, diabetes), multiple linear regression analysis was done. Mean bone mineral densities of osteoarthritis group was significantly lower than that of no osteoarthritis group(0.4269 vs. 0.5057). But, after adjusting the effect of possible confoundings, significant differences of bone mineral density between osteoarthritis and no osteoarthritis groups did not exist any more. These results suggest that there are no relationship between osteoarthritis and bone mineral densities in Korean women among aged 20s-70s. These results are opposite to the many studies which suggest the inverse relationship of osteoarthritis and osteoporosis.

Key words: osteoarthritis, osteoporosis, bone mineral density, relationship, cross-sectional

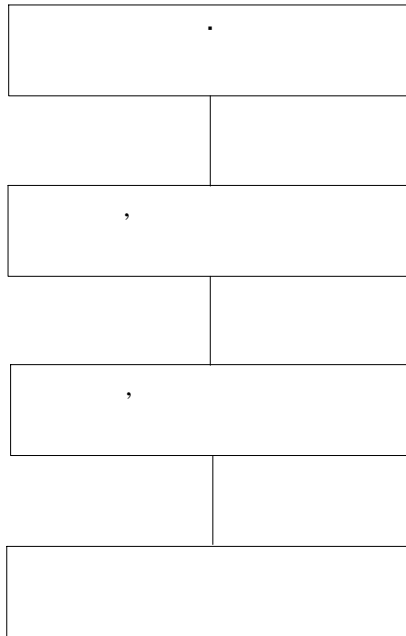
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1997 8 18 9 10

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 (segment) 6 가
 867 52.4% 519 1,656

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 HF-110A 1
 (Moskowitz, 1992).

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1)		1)		1)
2)		2)		2) ‡
a.		3)		
b.		a.	40	3)
c.	20	b.		
mm/h			30	4)
				a.
		c.		
				b. ‡

: Moskowitz (1992) pp.18, table 2-2
 ‡ 2, 3, 2, 3, 1
 * 1) 2) 1) 3)

2)

, 가
(Hologic, 1996).

가

3)

4)

III.

1.

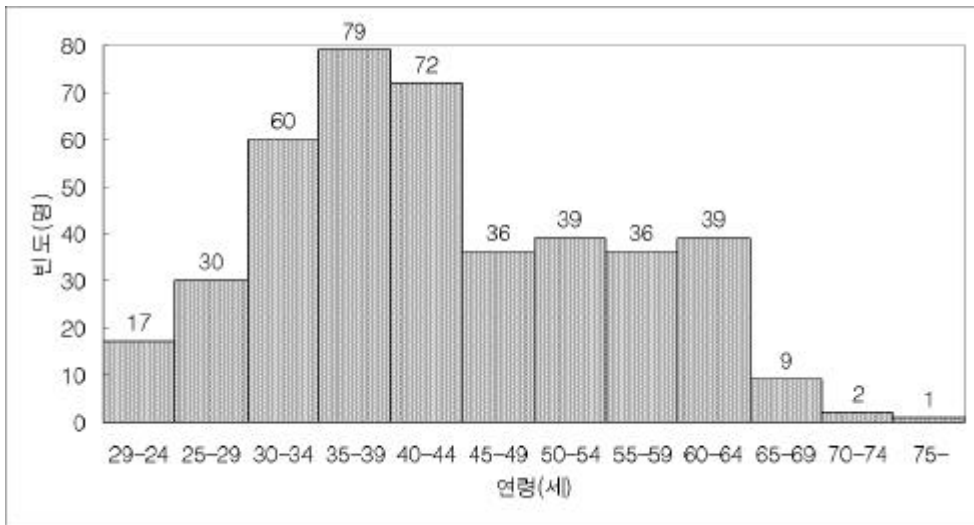
519 439 , 499 ,
515 가 420
80% (2). 가 420

2. , , (:)

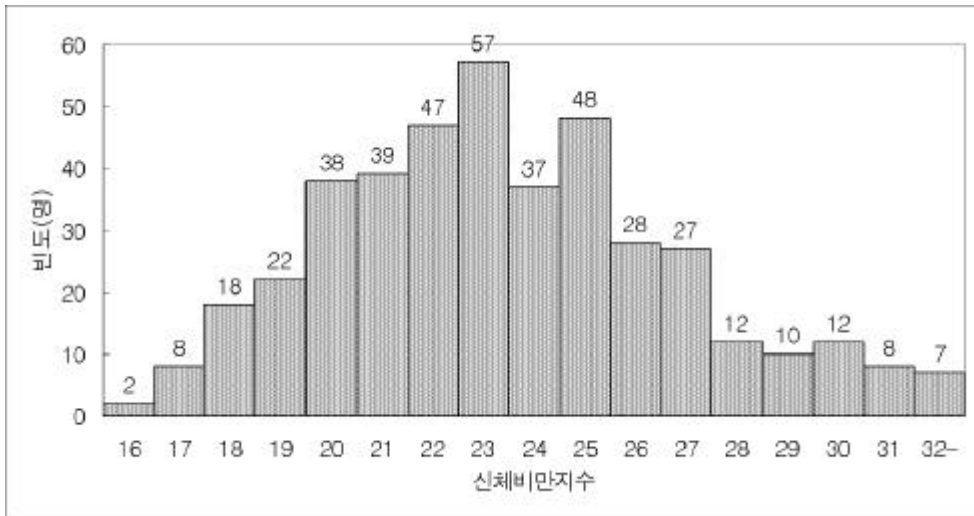
	420	15	435	
	3	1	4	
	423	16	439	439
	76	4	80	
	0	0	0	
	76	4	80	80

2.

43.0 , 11.8 . 2
 155.6 cm, 5.65 cm , 57.9 kg,
 8.54 kg . 23.9,
 3.48 . 3 .



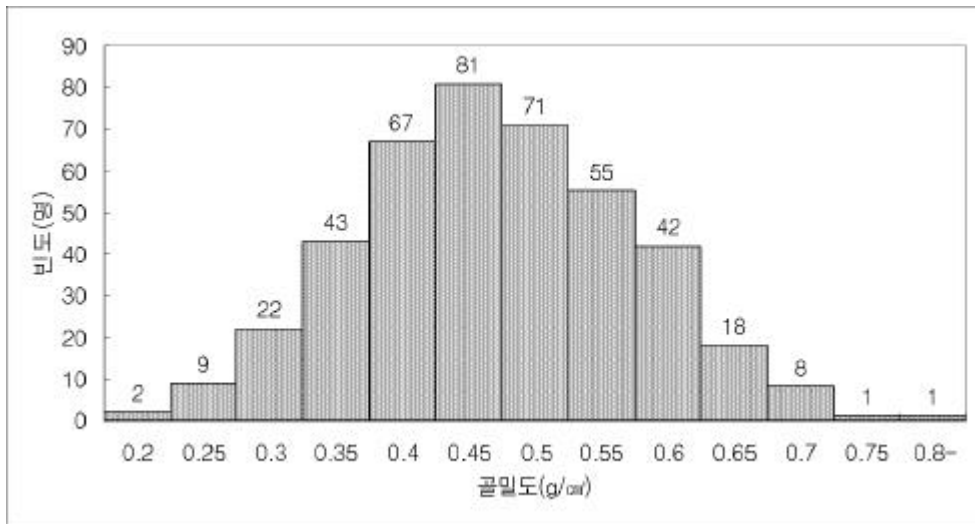
2.



3.

(body mass index, BMI)

, 0.493 g/cm³, 0.103 g/cm³ (4).



4.

1

가 , 가 64 ,
가 (3).

3. (:)

가		(%)
420	0	0.0
418	64	15.2
407	2	0.5

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(, ,)
(, , ,)
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(%)
(mm)
(cm)
(cm)

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(, , ,)

293 , 106

19 (4),

($p < 0.05$).

4. (:)

	(%)	(g/cm ²)			
		95%			
293	69.8	0.5204	0.0916	0.5099	0.5309
106	25.2	0.4206	0.0988	0.4016	0.4399
19	4.5	0.4881	0.0826	0.4483	0.5280
418					

$p < 0.05$, by analysis of variance test

29 6.9%

(5).

5.

()	(g/cm ²)			
	95%			
26	0.4797	0.1238	0.4297	0.5296
3	0.4603	0.0207	0.4089	0.5117
389	0.4941	0.1014	0.4840	0.5042
42	0.5171	0.0891	0.4921	0.5420
4	0.4044	0.0546	0.3174	0.4914
190	0.4924	0.0967	0.4786	0.5062
182	0.4899	0.1123	0.4734	0.5063

by analysis of variance test

가 (6), , 가

가 (5 , 0 , 3 , 0)
 ,
 9 (1 , 0 , 0 , 1 , D 0 , 9 , 4)

6.

* ()	(g/cm ²)				
	95%				
28	0.4297	0.0938	0.3934	0.4661	
68	0.4874	0.1049	0.4620	0.5128	
286	0.5057	0.0985	0.4943	0.5172	

p<0.05, by analysis of variance test

*

- 1) 140 mg/dℓ :
- 2) 140 mg/dℓ 2
- 200 mg/dℓ :
- 140-199 mg/dℓ: (impaired glucose tolerance, IGT)
- 140 mg/dℓ :

가 가

t- (7),
 (p<0.05).

7.

	(g/cm ²)				
	95%				
64	0.4269	0.0918	-0.1051	-0.0525	
354	0.5057	0.0997			

p<0.05, by independent sample t-test

가 (8). 가

8.

		공감도	연령	종교신앙수	신체비판지수	체지방	허리둘레	복달이둘리	상완둘레	일일평균 걷는 시간	복제적인 일을 하는 정도	
장간지수	공감도	1.000	-.457**	-.232**	-.164**	-.141**	.030	-.089	-.001	-.015	.059	
	연령	-.457**	1.000	.516**	.334**	.319**	-.085	.333**	.060	.054	.019	
	종교신앙수	-.232**	.516**	1.000	.280**	.176**	-.031	.539**	.026	.025	.047	
	신체비판지수	-.164**	.334**	.280**	1.000	.707**	.043	.718**	.163**	-.015	.075	
	체지방	-.141**	.319**	.176**	.707**	1.000	.031	.422**	.151**	-.068	.024*	
	허리둘레	.030	-.085	-.031	.043	.031	1.000	.035	.017	-.005	-.045	
	복달이둘리	-.089	.333**	.139**	.718**	.422**	.035	1.000	.124*	.017	.014	
	상완둘레	-.001	.060	.026	.163**	.151**	.017	.124*	1.000	-.005	.046	
	일일평균 걷는 시간	-.015	.054	.025	-.015	-.068	-.036	.017	-.006	1.000	.339**	
	복제적인 일을 하는 정도	.059	.019	.047	.075	.024*	-.049	.014	.046	.339**	1.000	
	유익수준 (2-tailed)	공감도		.030	.060	.001	.004	.296	.059	.204	.762	.227
		연령	.030		.060	.000	.000	.182	.096	.223	.269	.695
		종교신앙수	.060	.060		.000	.000	.524	.054	.597	.606	.342
신체비판지수		.001	.000	.000		.000	.377	.090	.601	.764	.127	
체지방		.004	.000	.000	.000		.285	.030	.002	.168	.034	
허리둘레		.296	.182	.524	.377	.285		.472	.733	.904	.320	
복달이둘리		.059	.096	.054	.090	.030	.472		.011	.723	.782	
상완둘레		.204	.223	.597	.601	.002	.733	.011		.899	.344	
일일평균 걷는 시간		.762	.269	.606	.764	.168	.904	.723	.899		.000	
복제적인 일을 하는 정도		.227	.695	.342	.127	.034	.320	.782	.344	.000		
분석요변수		공감도	420	420	418	420	420	420	420	420	417	418
		연령	420	420	418	420	420	420	420	420	420	417
		종교신앙수	418	418	418	418	418	418	418	418	418	415
	신체비판지수	420	420	418	420	420	420	420	420	420	417	
	체지방	420	420	418	420	420	420	420	420	420	417	
	허리둘레	420	420	418	420	420	420	420	420	420	417	
	복달이둘리	420	420	418	420	420	420	420	420	420	417	
	상완둘레	420	420	418	420	420	420	420	420	420	417	
	일일평균 걷는 시간	417	417	415	417	417	417	417	417	417	417	
	복제적인 일을 하는 정도	418	418	416	418	418	418	418	418	418	417	

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

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가 , ' , ,

(9), t-
(p 0.160)

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9.

I (R^2 0.221, adjusted R^2 0.204)

	(b)	95%		p	
(Constant)	0.607	0.038	0.532	0.682	0.000
	-0.00267	0.001	-0.004	-0.001	0.000
	0.00371	0.002	-0.001	0.008	0.090
	-0.04438	0.018	-0.080	-0.009	0.013
	-0.00228	0.024	-0.049	0.044	0.923
	-0.00004	0.002	-0.004	0.004	0.986
	0.00015	0.002	-0.003	0.003	0.925
	-0.02163	0.015	-0.052	0.009	0.160
	-0.01026	0.008	-0.026	0.006	0.214

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(stepwise regression)

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(10).

10.

II (R^2 0.208, adjusted R^2 0.204)

	(b)	95%		p	
(Constant)	0.617	0.023	0.571	0.662	0.000
	-0.00256	0.001	-0.004	-0.001	0.000
	-0.04605	0.016	-0.078	-0.014	0.005

가 가

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11. , (:)

	15	278	293
	46	60	106
	3	16	19
	64	354	418

(12).

(0.021).

g/cm^2

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0.080
가

가

가

(0.759)가

가

가 가

12.		III			
		(b)	95%		p
: R ² 0.021, adjusted R ² -0.001					
(Constant)	0.570	0.043	0.486	0.655	0.000
	-0.001362	0.001	-0.003	0.000	0.130
	0.004110	0.003	-0.002	0.010	0.203
	-0.002441	0.002	-0.007	0.002	0.309
	0.001885	0.002	-0.002	0.006	0.344
	-0.01844	0.027	-0.071	0.034	0.493
	-0.004673	0.011	-0.026	0.017	0.671
: R ² 0.238, adjusted R ² 0.182					
(Constant)	0.826	0.126	0.575	1.077	0.000
	-0.006939	0.002	-0.010	-0.003	0.000
	0.002813	0.003	-0.004	0.009	0.380
	0.002754	0.004	-0.005	0.011	0.503
	-0.003005	0.003	-0.009	0.003	0.344
	-0.01656	0.020	-0.056	0.023	0.404
	-0.001362	0.014	-0.030	0.027	0.925
: R ² 0.759, adjusted R ² 0.627					
(Constant)	0.917	0.158	0.568	1.265	0.000
	-0.006526	0.002	-0.010	-0.003	0.004
	0.002893	0.005	-0.008	0.014	0.585
	-0.01158	0.007	-0.027	0.004	0.122
	0.007248	0.008	-0.009	0.024	0.356
	-0.08028	0.035	-0.157	-0.003	0.043
	-0.009307	0.021	-0.056	0.038	0.671

13.		IV			
(b)		95%		p	
: R ² 0.215, adjusted R ² 0.206					
(Constant)	0.844	0.087	0.671	1.018	0.000
	-0.007276	0.001	-0.010	-0.004	0.000
: R ² 0.656, adjusted R ² 0.610					
(Constant)	0.811	0.084	0.632	0.989	0.000
	-0.006220	0.002	-0.010	-0.003	0.002
	-0.09301	0.035	-0.167	-0.019	0.017

IV.

1.

가 ()가 가 Dequeker (1996) 가

가 (Dequeker, 1985).

(Yu , 1995, Gevers , 1988), osteocalcin, local growth factor, insulin-like growth factors(IGF-I, IGF-II), transforming growth factor- (TGF-)가 가 가 (Dequeker , 1995).

가 가

가
Hologic Sahara Bone Sonometer
가 가
가
Speed of Sound(SOS)
Broadband Ultrasound Attenuation(BUA) SOS BUA
가 가
가 Sahara Bone Sonometer
, Quantitative Ultrasound Index(QUI) Stiffness

가 QUI 가

가

(Food and Drug Administration, FDA)

(Baran, 1997).

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(longitudinal study design)

(Sowers ,

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(Cooper , 1991).

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(Dequeker , 1996).

(Radin , 1970).

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(Dequeker, 1985, Dequeker , 1995).

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V.

9 10

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1. 0.493(g/cm²), 43.0 , 23.9 .
2. 0 ,
- 64 , 2 가 .
3. 106 , 19
4. ,
- 가
5. , , , , , ,
- , 가 .
6. 가
- 가
7. , 가 ,
- 가
8. 가 , 가 가
- 가 . 가 가 가
- 가 가 가
- 가

VI.

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