



Correction to: Age-related normative values of trabecular bone score (TBS) for Japanese women: the Japanese Population-based Osteoporosis (JPOS) study

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I have, as the Principal Investigator of this study, identified an error in the computation of TBS values in the JPOS cohort, which resulted in the publication of incorrect TBS absolute values [1]. This error was linked to the calibration process for calculating standardized TBS values in the R&D TBS software in which an inter-brand calibration was not activated. This calculation process of TBS was conducted by the author affiliated to Med-Imaps.

The difference between the correct and incorrect TBS values is an offset that should have been added to the published TBS values. This offset modification increased

TBS absolute values by 0.177 in all subjects. Therefore, the observed variation in TBS among subjects in the cohort, as well as TBS slopes per age, remain unchanged. Similarly, TBS T-scores are unaffected as the standard deviation is independent of offsets. Finally, correlation coefficients between TBS and demographic variables also remain unchanged. Revised portions to the manuscript are shown below in italics.

Changes to the Figures and Tables

The changes pertain to TBS absolute values. Hence, in Fig. 1, the scatter plot of TBS against age with a piecewise linear regression has been updated. Similarly, in Table 2, age-specific values of TBS have been updated. Finally, in Figure 3, the comparison of age-related changes in TBS between Japanese women and US non-Hispanic Caucasian women has also been updated. Figure legends have no change from the original version.

Changes to the text

Abstract

In the Results section, the reported average TBS value has been changed. The first sentence (P. 245, right column, L. 13) should read as: “Participant age, body mass index (BMI), spine aBMD, and TBS (mean ± SD) were 48.7 ± 16.8 years, 22.9 ± 3.4, 0.888 ± 0.169 g/cm², and 1.364 ± 0.137, respectively.”

In the Results section, the last sentence (P. 245, right column, L. 20) “TBS was lower in Japanese women than in Caucasian women across all age ranges, with the difference increasing with age up through 65 years” is no longer valid based on the corrected TBS values and thus was deleted.

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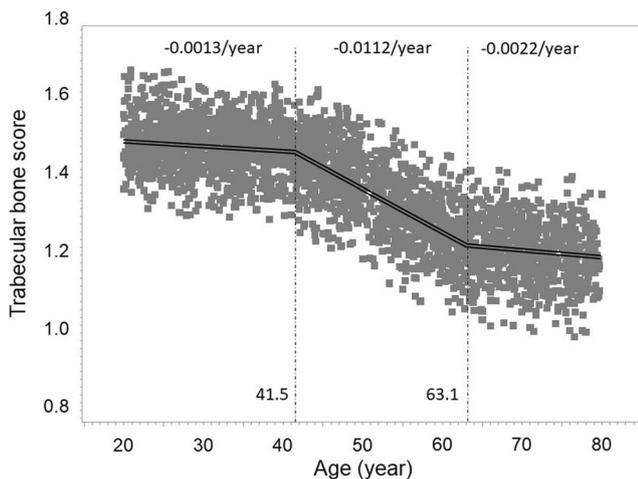


Fig. 1 Scatter plots of trabecular bone score (TBS) against age with a piecewise linear regression line from the Japanese Population-based Osteoporosis (JPOS) baseline study

Main text—Results

In the third paragraph, a percentage in the last sentence has been changed. Specifically, the sentence (P. 248, left column, L. 7) should read as: “The mean T-scores of TBS, LS-aBMD, and FN-aBMD in the oldest group were -4.12 , -2.92 , and -2.15 , respectively, and these values corresponded to 80.6 , 68.9 , and 71.3 % of the young adult mean values, respectively.”

In the fourth paragraph, the TBS cutoff values have been changed. The sentence (P. 248, right column, L. 3) should read

as: “When we applied the same approach to TBS, the cutoff value of TBS corresponding to 2.5 SD below the mean was 1.308 and the prevalence rate of this TBS range was 37.1% .”

In the fourth paragraph, the TBS cutoff value has been changed. The sentence (P. 248, right column, L. 10) should read as: “This value was calculated to be 1.226 , which corresponded to a T-score of -3.7 .”

In the fifth paragraph, since TBS absolute values have been changed, the related differences expressed in percent have also been changed. The sentence (P. 248, right column, L. 16) should read as: “TBS and aBMD values were both significantly greater before exclusion compared with after, but the magnitude of the effects of exclusion was smaller in TBS than in aBMD (% difference before exclusion compared with after, 0.15 vs. 0.74 % for overall participants and 0.54 vs. 3.22 % in participants aged 75 to 79 years, which showed the greatest effect across all age groups).”

In the seventh paragraph, since TBS absolute values have been changed, the related differences expressed in percent have also been changed. The second sentence (P. 248, right column, L. 37) should read as: “Overall, mean TBS in the present study was similar to that reported in the US study. However, the mean TBS at age 35 years was 6.9 % higher and that at age 60 was 7.0 % lower in Japanese women, relative to that in Caucasian women.”

In the seventh paragraph, since TBS absolute values have been changed, the related differences expressed in percent have also been changed. The third sentence (P. 248, right

Table 2 Age-specific values of TBS and aBMD of participants in the Japanese Population-based Osteoporosis (JPOS) baseline study

Age (years)	TBS					LS-aBMD (g/cm ²)		FN-aBMD (g/cm ²)	
	Mean	SD	Q1	Median	Q3	Mean	SD	Mean	SD
20–24	1.490	0.069	1.440	1.487	1.530	0.966	0.108	0.826	0.121
25–29	1.488	0.071	1.443	1.492	1.532	0.986	0.099	0.798	0.103
30–34	1.476	0.069	1.425	1.477	1.528	0.999	0.099	0.779	0.095
35–39	1.477	0.069	1.437	1.479	1.526	1.015	0.111	0.805	0.103
40–44	1.445	0.071	1.403	1.450	1.494	0.998	0.110	0.801	0.100
45–49	1.409	0.079	1.359	1.411	1.461	0.982	0.123	0.796	0.111
50–54	1.341	0.081	1.284	1.342	1.400	0.876	0.129	0.743	0.096
55–59	1.281	0.073	1.232	1.276	1.329	0.816	0.124	0.709	0.097
60–64	1.233	0.086	1.176	1.235	1.288	0.764	0.124	0.665	0.084
65–69	1.221	0.073	1.181	1.219	1.276	0.731	0.115	0.638	0.093
70–74	1.200	0.075	1.151	1.200	1.257	0.712	0.131	0.612	0.091
75–79	1.196	0.079	1.147	1.196	1.252	0.686	0.130	0.573	0.082
Young adults	1.483	0.070	1.437	1.485	1.529	0.992	0.106	0.802	0.107
Total	1.362	0.137	1.252	1.380	1.474	0.888	0.167	0.736	0.127

Young adults comprised 1,073 premenopausal women aged 20–39 years

TBS trabecular bone score, aBMD areal bone mineral density, LS lumbar spine (L1–4), FN femoral neck, SD standard deviation, Q1 lower quartile, Q3 upper quartile

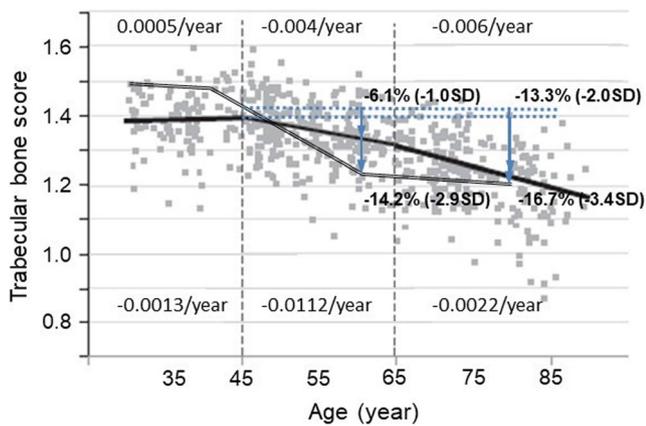


Fig. 3 Comparisons of age-related changes in trabecular bone score (TBS) between Japanese women and US non-Hispanic Caucasian women (adopted from Simonelli et al. [11] with permission). The piecewise linear regression line estimated for Japanese women is indicated by a double line

column, L. 41) should read as: “In Japanese women, TBS decreased by 14.2 % at age 63 and 16.7 % at age 80, relative to that at age 45.”

The last paragraph (P. 248, right column, L. 47) related to TBS value adjustment for height was deleted as the difference between Japanese and Caucasian women is no longer substantial.

Main text—Discussion

In the third paragraph, the second to fourth sentences (P. 250, left column, L. 1) related to the comparison of TBS values between Japanese women and French Caucasian and US non-Hispanic Caucasian women are no longer valid. Indeed, after applying the offset correction, the corrected TBS values in the JPOS cohort matched in average with the values observed in the French and US women. Thus, the discussion regarding the difference in TBS between Japanese and Caucasian women is no longer valid and was deleted. However, statements related

to the comparison of the rate of change in TBS with age remain unchanged. Therefore, the third paragraph should read as: “To date, two reference databases for TBS have been reported: one for French Caucasian women and one for US non-Hispanic Caucasian women. *Age-specific TBS values in these populations were very similar, and over-all average TBS were also similar to those obtained in the present study for Japanese women. However, a greater rate of change in TBS with age in Japanese women than in Caucasian women was observed in the middle age-band.* In addition, approximately a half of perimenopausal Caucasian women in France and the USA use sex hormones [26] while only 1.7 % of Japanese women use it [27]. High prevalence of sex hormone use may have prevented postmenopausal rapid loss of TBS in Caucasian women.”

In the fifth paragraph, the TBS cutoff value has been changed. The sentence (P. 250, right column, L. 7 from bottom) should read as: “On the other hand, a cutoff value of 1.226, which was calculated so as to obtain a 20% prevalence rate of low TBS (i.e., the same as the osteoporosis prevalence rate), corresponded to a T-score of -3.7 , which was much lower than the WHO osteoporosis criteria (-2.5) for aBMD.”

The mistakes mentioned above fortunately do not change the conclusion of the study. The authors would like to apologize to readers for any inconvenience the error may have caused.

Compliance with ethical standards

Conflict of interest R. Winzenrieth was a senior scientist at Med-Imaps at the time of publication of the original article. The other authors declare that there are no conflicts of interest.

Reference

1. Iki M, Tamaki J, Sato Y, Winzenrieth R, Kagamimori S, Kagawa Y, Yoneshima H (2015) Age-related normative values of trabecular bone score (TBS) for Japanese women: the Japanese Population-based Osteoporosis (JPOS) study. *Osteoporos Int* 26:245–252