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A predictive model for creep deformation following vertebral compression fractures

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**Table 1.** Estimation of the model parameter  $p$  using linear regression analyses for  $(\ln \dot{\epsilon}_c - \ln \dot{\epsilon}_0)$  and  $-\ln(1 - \omega)$ .

<b>Models</b>	<b>B (S.E.)</b>	<b>P</b>
<b>Vertebral trabeculae</b> $n = 27, R^2 = 0.72$		< 0.001
$p_T$	1.38 (0.17)	< 0.001
constant	-0.13 (0.20)	0.538
<b>Vertebral bodies</b> $n = 38, R^2 = 0.22$		0.003
$p_{VB}$	1.48 (0.47)	0.003
constant	0.21 (0.53)	0.691
<b>Combined dataset</b> $n = 65, R^2 = 0.37$		<0.001
$p_{COMB}$	1.45 (0.24)	< 0.001
constant	0.06 (0.27)	0.816

Equation 5 in the text was used.  $p_T$ ,  $p_{VB}$ , and  $p_{COMB}$ : model parameter estimated from mechanical data of vertebral trabeculae samples, vertebral bodies, and combined data, respectively.  $n$ : number of specimens tested; B: unstandardized regression coefficient; S.E. = standard error

**Table 2.** Results from regression analyses examining the moderation of endplate damage, cortical bone damage, disc degeneration, vertebral cross-sectional area (CSA), and vertebral aBMD on the model parameter  $p_{VB}$  ( $n=38$ )

Moderation analysis	B (S.E.)	P
<b>Model 1:</b> moderation effect of endplate damage		
$R^2=0.24$		0.002
$-\ln(1 - \omega) (p_{VB})$	1.34 (0.65)	0.048
Endplate damage ( $b_M$ )	-0.14 (0.49)	0.776
Endplate damage $\times [-\ln(1 - \omega)] (b_I)$	-0.93 (1.13)	0.415
<b>Model 2:</b> moderation effect of cortical bone damage		
$R^2=0.26$		0.039
$-\ln(1 - \omega) (p_{VB})$	1.43 (0.62)	0.027
Cortical bone damage ( $b_M$ )	0.67 (0.55)	0.229
Cortical bone damage $\times [-\ln(1 - \omega)] (b_I)$	0.25 (1.47)	0.867
<b>Model 3:</b> moderation effect of disc degeneration		
$R^2=0.28$		0.001
$-\ln(1 - \omega) (p_{VB})$	1.35 (0.61)	0.034
Disc degeneration ( $b_M$ )	0.51 (0.39)	0.212
Disc degeneration $\times [-\ln(1 - \omega)] (b_I)$	0.74 (0.76)	0.333
<b>Model 4:</b> moderation effect of vertebral CSA		
$R^2=0.24$		0.014
$-\ln(1 - \omega) (p_{VB})$	1.39 (0.49)	0.008
Cross-sectional area ( $b_M$ )	-0.00 (0.00)	0.658
Cross-sectional area $\times [-\ln(1 - \omega)] (b_I)$	0.00 (0.00)	0.348
<b>Model 5:</b> moderation effect of vertebral aBMD		
$R^2=0.28$		0.005
$-\ln(1 - \omega) (p_{VB})$	0.94 (0.58)	0.113
Vertebral aBMD ( $b_M$ )	-1.15 (1.12)	0.309
Vertebral aBMD $\times [-\ln(1 - \omega)] (b_I)$	-4.38 (2.49)	0.089

$n$  = number of specimens; B = unstandardized coefficient; S.E. = standard error.