

SUPPLEMENTARY MATERIAL

Table 5 Mixed models: Associations between last 12 months of HAV exposure from rock drills and pegboard score using dominant hand; coefficients represent increase of performance time in the pegboard test (seconds) per tenfold increase in last 12-months exposure before tests ($h \cdot ms^{-2}$)

Age (years)	Coefficient	95% Confidence Interval
20-29	1 REF	
30-39	-0.08	-3.25 to 3.03
40-49	4.89	1.81 to 7.98*
50-59	9.73	6.21 to 13.25*
60-69	15.21	10.55 to 19.88*
Rock drill exposure		
Last year	-0.72	-1.45 to -0.21
Constant	57.06	54.72 to 59.40*

*Significant at $p \leq 0.05$

Table 6. Results summary from mixed models at dominant and non-dominant 2nd and 5th fingers at seven test-frequencies: Associations between lifetime cumulative HAV exposure from impact wrenches and VPT; coefficients represent increase of VPT (dB) per tenfold increase in lifetime cumulative exposure ($h \cdot ms^{-2}$)^{ab}

Frequency	Dominant 2 nd finger (n=147, number of obs = 248) ^{c d}	Dominant 5 th finger (n=146, number of obs = 244) ^{c d}	Non-dominant 2 nd finger (n=144, number of obs = 242) ^{c d}	Non-dominant 5 th finger (n=147, number of obs = 246) ^{c d}
Hz	Coefficients (95 % CI) ^e			
8	0.26 (-0.49 to 1.00)	0.17 (-0.62 to 0.96)	0.10 (-0.60 to 0.79)	0.04 (-0.73 to 0.81)
16	0.65 (-0.09 to 1.39)	0.21 (-0.56 to 0.98)	0.22 (-0.58 to 1.03)	0.34 (-0.40 to 1.09)
32	0.05 (-0.64 to 0.74)	0.17 (-0.62 to 0.96)	0.26 (-0.52 to 1.04)	0.16 (-0.63 to 0.96)
64	0.14 (-0.76 to 1.15)	0.59 (-0.30 to 1.49)	0.46 (-0.51 to 1.44)	0.09 (-0.87 to 1.05)
125	0.21 (-0.76 to 1.17)	0.14 (-0.94 to 1.22)	0.70 (-0.30 to 1.71)	0.29 (-0.91 to 1.48)
250	0.11 (-0.98 to 1.20)	-0.14 (-1.50 to 1.23)	0.20 (-1.01 to 1.41)	0.47 (-0.87 to 1.81)
500	-0.47 (-1.62 to 0.68)	0.23 (-1.29 to 1.74)	0.46 (-0.98 to 1.90)	0.55 (-0.91 to 2.02)

* $p \leq 0.05$

^{a)} Log10-transformed exposure was used in models adjusted for age in 10-year intervals.

^{b)} HAV exposure was calculated as lifetime cumulative exposure at each VPT-test. Subject ID was used as random intercept in linear mixed models

^{c)} Each subject was tested for VPT 1 – 3 three times (mean 1.7 times) with approx. two years between each test.

^{d)} The number of participants is less than the total of n=148 for each tested finger because of participants having injured or missing fingertips

^{e)} Impact wrench exposure was adjusted for rock drill exposure in the models

Table 7. Results summary from mixed models at dominant and non-dominant 2nd and 5th fingers at seven test-frequencies: Associations between HAV exposure from impact wrenches and VPT; coefficients represent increase of VPT (dB) per tenfold increase in last 12-months exposure before tests ($h \cdot ms^{-2}$)^{ab}

Frequency	Dominant 2 nd finger (n=147, number of obs = 248) ^{c,d}	Dominant 5 th finger (n=146, number of obs = 244) ^{c,d}	Non-dominant 2 nd finger (n=144, number of obs = 242) ^{c,d}	Non-dominant 5 th finger (n=147, number of obs = 246) ^{c,d}
Hz	Coefficients (95 % CI) ^e			
8	-0.44 (-1.29 to 0.41)	-0.46 (-1.39 to 0.47)	-0.40 (-1.22 to 0.43)	-0.45 (-1.35 to 0.44)
16	0.08 (-0.76 to 0.92)	-0.35 (-1.24 to 0.55)	-0.27 (-1.22 to 0.68)	0.08 (-0.79 to 0.96)
32	0.05 (-0.72 to 0.83)	-0.07 (-0.99 to 0.86)	-0.05 (-0.95 to 0.84)	0.05 (-0.88 to 0.97)
64	0.16 (-0.85 to 1.18)	0.29 (-0.76 to 1.35)	0.61 (-0.51 to 1.75)	0.38 (-0.73 to 1.49)
125	0.28 (-0.83 to 1.39)	-0.38 (-1.70 to 0.93)	0.08 (-1.11 to 1.26)	0.39 (-1.01 to 1.79)
250	-0.21 (-1.47 to 1.06)	-0.39 (-1.99 to 1.21)	-0.45 (-1.87 to 0.98)	0.23 (-1.39 to 1.84)
500	-0.21 (-1.54 to 1.13)	0.22 (-1.58 to 2.01)	0.16 (-1.48 to 1.80)	0.45 (-1.31 to 2.22)

* $p \leq 0.05$

a) Log₁₀-transformed exposure was used in models adjusted for age in 10-year intervals.

b) HAV exposure was calculated as average exposure during the last year before the VPT-test. Subject ID was used as random intercept in linear mixed models

c) Each subject was tested for VPT 1 – 3 three times (mean 1.7 times) with approx. two years between each test.

d) The number of participants is less than the total of n=148 for each tested finger because of participants having injured or missing fingertips

e) Impact wrench exposure was adjusted for rock drill exposure in the models

Table 8. Mixed models: Associations between lifetime cumulative HAV exposure from rock drills and pegboard score using non-dominant hand; coefficients represent increase of performance time in the pegboard test (seconds) per tenfold increase in lifetime cumulative exposure ($\text{h} \cdot \text{ms}^{-2}$)

Age (years)	Coefficient	95% Confidence Interval
20-29	1 REF	
30-39	2.64	-1.76 to 6.84
40-49	6.37	2.27 to 10.47*
50-59	10.70	5.85 to 15.43*
60-69	21.8	15.72 to 27.92*
Rock drill exposure		
Lifetime cumulative	-0.60	-1.38 to 0.18
Constant	61.4	58.3 to 64.5 *

*Significant at $p \leq 0.05$

Table 9. Mixed models: Associations between last 12-months HAV exposure from rock drills and pegboard score using non-dominant hand; coefficients represent increase of performance time in the pegboard test (seconds) per tenfold increase in exposure last year ($\text{h} \cdot \text{ms}^{-2}$)

Age (years)	Coefficient	95% Confidence Interval
20-29	1 REF	
30-39	2.72	-1.43 to 6.86
40-49	6.26	2.22 to 10.31*
50-59	10.36	5.62 to 15.10*
60-69	21.2	15.07 to 27.24*
Rock drill exposure		
Last year	-0.98	-1.92 to -0.04*
Constant	61.7	58.7 to 64.7 *

*Significant at $p \leq 0.05$

Table 10. Mixed models: Associations between lifetime cumulative HAV exposure from impact wrenches and pegboard score using dominant hand; coefficients represent increase of performance time in the pegboard test (seconds) per tenfold increase in lifetime cumulative exposure ($\text{h} \cdot \text{ms}^{-2}$)

Age (years)	Coefficient	95% Confidence Interval
20-29	1 REF	
30-39	-0.25	-3.45 to 2.93
40-49	4.84	1.67 to 8.00*
50-59	9.64	5.95 to 13.33*
60-69	15.52	10.81 to 20.23*
Impact wrench exposure		
Lifetime cumulative	0.42	-0.32 to 1.16
Constant	55.7	53.5 to 57.9 *

*Significant at $p \leq 0.05$

Table 11. Mixed models: Associations between lifetime cumulative HAV exposure from impact wrenches and pegboard score using non-dominant hand; coefficients represent increase of performance time in the pegboard test (seconds) per tenfold increase in lifetime cumulative exposure ($\text{h} \cdot \text{ms}^{-2}$)

Age (years)	Coefficient	95% Confidence Interval
20-29	1 REF	
30-39	2.64	-1.59 to 6.87
40-49	6.92	2.73 to 11.11*
50-59	11.53	6.54 to 16.52*
60-69	22.57	16.36 to 28.78*
Impact wrench exposure		
Lifetime cumulative	-0.30	-1.25 to 0.66
Constant	60.6	57.7 to 63.5 *

*Significant at $p \leq 0.05$

Table 12. Mixed models: Associations between last 12-months exposure from impact wrenches and pegboard score using dominant hand; coefficients represent increase of performance time in the pegboard test (seconds) per tenfold increase in exposure last 12 months ($\text{h} \cdot \text{ms}^{-2}$)

Age (years)	Coefficient	95% Confidence Interval
20-29	1 REF	
30-39	-0.29	-3.49 to 2.92
40-49	4.90	1.71 to 9.10*
50-59	9.90	6.25 to 13.56*
60-69	15.85	11.20 to 20.50*
Impact wrench exposure		
Last year	-0.41	-0.64 to 1.45
Constant	55.9	53.8 to 58.0 *

*Significant at $p \leq 0.05$

Table 13 Mixed models: Associations between last 12-months HAV exposure from impact wrenches and pegboard score using non-dominant hand; coefficients represent increase of performance time in the pegboard test (seconds) per tenfold increase in exposure last 12 months ($\text{h} \cdot \text{ms}^{-2}$)

Age (years)	Coefficient	95% Confidence Interval
20-29	1 REF	
30-39	2.53	-1.71 to 6.77
40-49	6.52	2.30 to 10.74*
50-59	10.91	5.96 to 15.85*
60-69	22.16	16.03 to 28.29*
Impact wrench exposure		
Last year	0.19	-1.18 to 1.57
Constant	60.3	57.5 to 63.1 *

*Significant at $p \leq 0.05$