|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| *Symptoms begin only because of injury* | | | | |
|  | | Estimate | Standard Error | Unweighted Count |
| Population Size | Yes | 27008823.000 | 1550881.929 | 1146 |
| No | 57657161.000 | 1991156.344 | 2767 |
| Total | 84665984.000 | 3030523.368 | 3913 |
| % of Total | Yes | 31.9% | 1.1% | 1146 |
| No | 68.1% | 1.1% | 2767 |
| Total | 100.0% | 0.0% | 3913 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| *Bone/joint injury* | | | | |
|  | | Estimate | Standard Error | Unweighted Count |
| Population Size | No | 269765543.000 | 7967611.958 | 19292 |
| Yes | 8886724.000 | 923183.502 | 467 |
| Total | 278652267.000 | 8335243.942 | 19759 |
| % of Total | No | 96.8% | 0.3% | 19292 |
| Yes | 3.2% | 0.3% | 467 |
| Total | 100.0% | 0.0% | 19759 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| *Symptoms begin only because of injury \* Bone/joint injury* | | | | | |
| Symptoms begin only because of injury | | | Bone/joint injury | | |
| No | Yes | Total |
| Yes | Population Size | Estimate | 22925762.000 | 4083061.000 | 27008823.000 |
| Standard Error | 1375676.426 | 420822.769 | 1550881.929 |
| % within Symptoms begin only because of injury | Estimate | 84.9% | 15.1% | 100.0% |
| Standard Error | 1.3% | 1.3% | 0.0% |
| % within Bone/joint injury | Estimate | 29.6% | 55.9% | 31.9% |
| Standard Error | 1.1% | 3.4% | 1.1% |
| % of Total | Estimate | 27.1% | 4.8% | 31.9% |
| Standard Error | 1.0% | 0.5% | 1.1% |
| No | Population Size | Estimate | 54429499.000 | 3227662.000 | 57657161.000 |
| Standard Error | 1899019.431 | 484468.926 | 1991156.344 |
| % within Symptoms begin only because of injury | Estimate | 94.4% | 5.6% | 100.0% |
| Standard Error | 0.8% | 0.8% | 0.0% |
| % within Bone/joint injury | Estimate | 70.4% | 44.1% | 68.1% |
| Standard Error | 1.1% | 3.4% | 1.1% |
| % of Total | Estimate | 64.3% | 3.8% | 68.1% |
| Standard Error | 1.3% | 0.5% | 1.1% |
| Total | Population Size | Estimate | 77355261.000 | 7310723.000 | 84665984.000 |
| Standard Error | 2810915.804 | 774671.497 | 3030523.368 |
| % within Symptoms begin only because of injury | Estimate | 91.4% | 8.6% | 100.0% |
| Standard Error | 0.8% | 0.8% | 0.0% |
| % within Bone/joint injury | Estimate | 100.0% | 100.0% | 100.0% |
| Standard Error | 0.0% | 0.0% | 0.0% |
| % of Total | Estimate | 91.4% | 8.6% | 100.0% |
| Standard Error | 0.8% | 0.8% | 0.0% |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| *Tests of Independence* | | | | | | |
|  | | Chi-Square | Adjusted F | df1 | df2 | Sig. |
| Symptoms begin only because of injury \* Bone/joint injury | Pearson | 97.644 | 61.263 | 1 | 29 | <.001 |
| Likelihood Ratio | 90.617 | 56.854 | 1 | 29 | <.001 |
| The adjusted F is a variant of the second-order Rao-Scott adjusted chi-square statistic. Significance is based on the adjusted F and its degrees of freedom. | | | | | | |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *Descriptive Estimates by Injury Status* | |  | |  | | |  | | | |  |  | | | | |  | | |  | | |  | | | |  | | |  |
|  | | *No injury* | | | | | | | | | | |  | | | | | *Bone/joint injury* | | | | | | | | | | | |  |
|  | | Estimate | | | S.E. | | 95% Confidence Interval | | | |  |  | | | | |  | | |  | | | 95% Confidence Interval | | | |  | | |  |
| Lower | | Upper | | | |  |  | | | | Estimate | | | S.E. | | Lower | | Upper | | |  | |  | | |
|  | Age at screening | | 34.86 | | | 0.38 | | 34.06 | | 35.65 | | | | |  |  | | | 56.89 | | | 1.20 | | 54.42 | | 59.35 | | |  | | |  | |
| Body mass index (kg/m2) | | 25.76 | | | 0.12 | | 25.51 | | 26.02 | | | | |  |  | | | 29.94 | | | 0.41 | | 29.08 | | 30.79 | | |  | | |  | |
| Total percent fat (DXA) | | 32.81 | | | 0.13 | | 32.54 | | 33.08 | | | | |  |  | | | 36.99 | | | 0.51 | | 35.94 | | 38.03 | | |  | | |  | |
| Estimated VO2max (ml/kg/min) | | 41.10 | | | 0.29 | | 40.50 | | 41.70 | | | | |  |  | | | 39.83 | | | 3.46 | | 32.75 | | 46.91 | | |  | | |  | |
| Family PIR | | 2.79 | | | 0.061 | | 2.67 | | 2.92 | | | | |  |  | | | 2.35 | | | 0.16 | | 2.02 | | 2.68 | | |  | | |  | |
| Total pain count | | 1.43 | | | 0.046 | | 1.33 | | 1.52 | | | | |  |  | | | 6.35 | | | 0.54 | | 5.23 | | 7.47 | | |  | | |  | |
| #wks have joint pain symptoms | | 22.00 | | | 1.09 | | 19.76 | | 24.24 | | | | |  |  | | | 37.73 | | | 1.57 | | 34.51 | | 40.96 | | |  | | |  | |
| Total functional difficulty | | 0.81 | | | 0.021 | | 0.76 | | 0.85 | | | | |  |  | | | 5.28 | | | 0.19 | | 4.88 | | 5.69 | | |  | | |  | |
| # of times past 30 days (tasks around home) | | 10.31 | | | 0.38 | | 9.53 | | 11.09 | | | | |  |  | | | 14.81 | | | 1.84 | | 11.03 | | 18.58 | | |  | | |  | |
| Total bone mineral density (g/cm2) | | 1.10 | | | 0.002 | | 1.09 | | 1.10 | | | | |  |  | | | 1.091 | | | 0.0079 | | 1.07 | | 1.10 | | |  | | |  | |
| Bone alkaline phosphatase (ug/L) | | 25.01 | | | 0.49 | | 24.00 | | 26.02 | | | | |  |  | | | 16.45 | | | 0.66 | | 15.09 | | 17.82 | | |  | | |  | |
| C-reactive protein(mg/dL) | | 0.34 | | | 0.0075 | | 0.32 | | 0.35 | | | | |  |  | | | 0.53 | | | 0.045 | | 0.44 | | 0.62 | | |  | | |  | |
| Fibrinogen (mg/dL) | | 364.04 | | | 2.78 | | 358.34 | | 369.73 | | | | |  |  | | | 383.28 | | | 7.35 | | 368.24 | | 398.33 | | |  | | |  | |
| Helicobacter pylori (ISR) | | 0.81 | | | 0.030 | | 0.75 | | 0.884 | | | | |  |  | | | 1.04 | | | 0.085 | | 0.86 | | 1.23 | | |  | | |  | |
| N-telopeptides (NTx) (nmol BCE) | | 715.15 | | | 18.68 | | 676.93 | | 753.37 | | | | |  |  | | | 418.68 | | | 24.73 | | 368.09 | | 469.26 | | |  | | |  | |
| Average peak force (Newtons) | | 285.58 | | | 2.84 | | 279.77 | | 291.39 | | | | |  |  | | | 244.65 | | | 8.13 | | 228.01 | | 261.28 | | |  | | |  | |
| Peak force (Newtons) | | 364.29 | | | 2.86 | | 358.43 | | 370.15 | | | | |  |  | | | 319.14 | | | 9.14 | | 300.43 | | 337.85 | | |  | | |  | |
| Peak force velocity degree/seconds | | 53.87 | | | 0.458 | | 52.93 | | 54.81 | | | | |  |  | | | 46.97 | | | 2.57 | | 41.69 | | 52.25 | | |  | | |  | |
| Hours worked last week at all jobs | | 40.71 | | | 0.381 | | 39.90 | | 41.53 | | | | |  |  | | | 36.10 | | | 2.86 | | 30.00 | | 42.21 | | |  | | |  | |
| How long per day (minutes) (walked or bicycled) | | 43.85 | | | 1.13 | | 41.53 | | 46.16 | | | | |  |  | | | 42.24 | | | 5.58 | | 30.82 | | 53.67 | | |  | | |  | |
| How long each time (minutes) (tasks around home) | | 85.26 | | | 1.62 | | 81.93 | | 88.59 | | | | |  |  | | | 88.07 | | | 7.62 | | 72.48 | | 103.66 | | |  | | |  | |
| Number of times past 30 days (muscle strengthening activities) | | 14.73 | | | 0.207 | | 14.31 | | 15.15 | | | | |  |  | | | 18.09 | | | 3.48 | | 10.96 | | 25.22 | | |  | | |  | |
| Total factor count | | 2.10 | | | 0.024 | | 2.05 | | 2.15 | | | | |  |  | | | 3.74 | | | 0.067 | | 3.60 | | 3.87 | | |  | | |  | |

Table shows weighted mean estimates for the total sample by reported injury status.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *Descriptive Estimates by Sex* | | | | | | | | |
| Gender | | | Estimate | Standard Error | 95% Confidence Interval | | Population Size | Unweighted Count |
| Lower | Upper |
| Male | Mean | Age at Screening | 34.44 | .392 | 33.64 | 35.24 | 135811155.000 | 9660 |
| Body Mass Index (kg/m\*\*2) | 25.6527 | .11158 | 25.4245 | 25.8809 | 127215057.000 | 8478 |
| Total percent fat (DXA) | 27.2958 | .12224 | 27.0458 | 27.5458 | 116807325.000 | 7406 |
| Estimated VO2max (ml/kg/min) | 45.0712 | .30782 | 44.4417 | 45.7008 | 43111050.000 | 2822 |
| Family PIR | 2.8700 | .06280 | 2.7416 | 2.9984 | 124785377.000 | 8713 |
| Total pain count | 1.3763 | .06282 | 1.2478 | 1.5047 | 135811155.000 | 9660 |
| #wks have joint pain symptoms | 24.73 | 1.175 | 22.33 | 27.14 | 15010155.000 | 611 |
| Total functional difficulty | .7781 | .02802 | .7208 | .8354 | 135811155.000 | 9660 |
| # of times past 30 days (tasks around home) | 9.54 | .269 | 8.99 | 10.09 | 67668301.000 | 3197 |
| Total Bone Mineral Density (g/cm^2) | 1.1364 | .00236 | 1.1316 | 1.1412 | 116807325.000 | 7406 |
| Bone alkaline phosphatase (ug/L) | 28.9237 | .58697 | 27.7232 | 30.1242 | 102771142.000 | 6485 |
| C-reactive protein(mg/dL) | .2815 | .00766 | .2659 | .2972 | 110866513.000 | 7258 |
| Fibrinogen (mg/dL) | 356.53 | 3.279 | 349.82 | 363.24 | 47229825.000 | 2533 |
| Helicobacter pylori (ISR) | .8349 | .03003 | .7705 | .8994 | 55345636.000 | 3664 |
| N-telopeptides (NTx) (nmol BCE) | 911.88 | 30.058 | 850.40 | 973.35 | 94671388.000 | 5409 |
| Average peak force (Newtons) | 336.8201 | 5.12957 | 326.3289 | 347.3113 | 26090176.000 | 1540 |
| Peak force (Newtons) | 440.89 | 4.953 | 430.76 | 451.02 | 26090176.000 | 1540 |
| Peak force velocity degree/seconds | 56.0228 | .41860 | 55.1667 | 56.8789 | 26090176.000 | 1540 |
| Hours worked last week at all jobs | 44.26 | .395 | 43.42 | 45.10 | 37826994.000 | 1736 |
| How long per day (minutes) (walked or bicycled) | 47.50 | 1.773 | 43.88 | 51.13 | 30119388.000 | 2157 |
| How long each time (minutes) (tasks around home) | 89.90 | 1.592 | 86.64 | 93.16 | 67580252.000 | 3193 |
| Number of times past 30 days (muscle strengthening activities) | 15.37 | .296 | 14.76 | 15.97 | 39655010.000 | 2693 |
| Total factor count | 2.1086 | .02412 | 2.0593 | 2.1579 | 135811155.000 | 9660 |
| Female | Mean | Age at Screening | 36.63 | .464 | 35.68 | 37.58 | 142841112.000 | 10099 |
| Body Mass Index (kg/m\*\*2) | 26.1219 | .15659 | 25.8017 | 26.4422 | 134368342.000 | 8994 |
| Total percent fat (DXA) | 38.9437 | .16979 | 38.5965 | 39.2910 | 111112508.000 | 6093 |
| Estimated VO2max (ml/kg/min) | 36.8379 | .28910 | 36.2467 | 37.4292 | 40170742.000 | 2693 |
| Family PIR | 2.7043 | .06168 | 2.5782 | 2.8305 | 130147364.000 | 9063 |
| Total pain count | 1.7933 | .05535 | 1.6801 | 1.9065 | 142841112.000 | 10099 |
| #wks have joint pain symptoms | 23.97 | 1.432 | 21.04 | 26.90 | 11338830.000 | 509 |
| Total functional difficulty | 1.1207 | .02791 | 1.0636 | 1.1778 | 142841112.000 | 10099 |
| # of times past 30 days (tasks around home) | 11.49 | .632 | 10.20 | 12.79 | 62205668.000 | 2896 |
| Total Bone Mineral Density (g/cm^2) | 1.0654 | .00240 | 1.0605 | 1.0703 | 111112508.000 | 6093 |
| Bone alkaline phosphatase (ug/L) | 20.6216 | .54360 | 19.5098 | 21.7334 | 103956036.000 | 6411 |
| C-reactive protein(mg/dL) | .4107 | .01300 | .3841 | .4373 | 114822282.000 | 7584 |
| Fibrinogen (mg/dL) | 372.59 | 2.893 | 366.67 | 378.51 | 53048284.000 | 2533 |
| Helicobacter pylori (ISR) | .8145 | .03488 | .7397 | .8893 | 57520476.000 | 3829 |
| N-telopeptides (NTx) (nmol BCE) | 503.85 | 21.768 | 459.33 | 548.38 | 97467863.000 | 5349 |
| Average peak force (Newtons) | 236.5307 | 2.25055 | 231.9278 | 241.1336 | 29339000.000 | 1500 |
| Peak force (Newtons) | 292.38 | 2.522 | 287.23 | 297.54 | 29363036.000 | 1502 |
| Peak force velocity degree/seconds | 51.3732 | .71408 | 49.9127 | 52.8336 | 29363036.000 | 1502 |
| Hours worked last week at all jobs | 36.13 | .547 | 34.96 | 37.29 | 31056195.000 | 1472 |
| How long per day (minutes) (walked or bicycled) | 40.00 | 1.446 | 37.04 | 42.96 | 29383112.000 | 2135 |
| How long each time (minutes) (tasks around home) | 80.42 | 2.056 | 76.21 | 84.62 | 62090571.000 | 2889 |
| Number of times past 30 days (muscle strengthening activities) | 14.09 | .272 | 13.54 | 14.65 | 31031925.000 | 2028 |
| Total factor count | 2.2018 | .02970 | 2.1411 | 2.2626 | 142841112.000 | 10099 |

*Odds Ratios for Demographic Groups*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Categories |  | Odds Ratio | 95% Confidence Interval | |
|  | Lower | Upper |
| Male sex | Female† |  | 1.186 | 0.986 | 1.426 |
| Age group | 20-39† |  | . | . | . |
|  | 40-49 |  | 1.957\* | 1.299 | 2.947 |
| 50-59 |  | 2.087\* | 1.373 | 3.171 |
| 60 and above |  | 4.824\* | 3.319 | 7.010 |
| Education Level - Adults 20+ | Less Than 9th Grade† |  | . | . | . |
|  | 9-11th Grade (Includes 12th grade with no diploma) |  | 0.578\* | 0.353 | 0.948 |
| High School Grad/GED or Equivalent |  | 0.530\* | 0.336 | 0.836 |
| Some College or AA degree |  | 0.483\* | 0.321 | 0.726 |
| College Graduate or above |  | 0.353\* | 0.205 | 0.607 |
| Race/Ethnicity | Non-Hispanic White† |  | . | . | . |
| Non-Hispanic Black |  | 0.788 | 0.576 | 1.077 |
| Mexican American |  | 0.446\* | 0.305 | 0.653 |
| Other Race - Including Multi-Racial |  | 0.524 | 0.259 | 1.061 |
| Other Hispanic |  | 1.288 | 0.505 | 3.285 |
| Family PIRTercile‡ | 1.00 |  | 1.881\* | 1.226 | 2.885 |
|  | 2.00 |  | 1.134 | 0.793 | 1.622 |
|  | 3.00† |  | . | . | . |
| Veteran/Military Status | Yes |  | 1.512\* | 1.136 | 2.013 |

Table shows odds ratios for the dependent variable: health problems causing difficulty from bone/joint injury. †Reference categories. ‡PIR = family income to poverty level ratio. \*Significant at p<0.01.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| *‘Low Risk’ Model Descriptive Estimates* | | | | | | | |
|  | | Estimate | Standard Error | 95% Confidence Interval | | Population Size | Unweighted Count |
| Lower | Upper |
| Mean | Age at Screening | 29.25 | .394 | 28.44 | 30.05 | 210915458.000 | 16254 |
| Body Mass Index (kg/m2) | 24.0698 | .09344 | 23.8787 | 24.2609 | 194091361.000 | 13977 |
| Total percent fat (DXA) | 31.1396 | .12550 | 30.8829 | 31.3962 | 160615193.000 | 10019 |
| Estimated VO2max (ml/kg/min) | 41.3171 | .27774 | 40.7491 | 41.8852 | 72804180.000 | 5104 |
| Family PIR | 2.7000 | .06412 | 2.5689 | 2.8312 | 193266093.000 | 14640 |
| Total pain count | 1.2025 | .04072 | 1.1193 | 1.2858 | 210915458.000 | 16254 |
| #wks have joint pain symptoms | 23.02 | 73.032 | 85.30 | 384.04 | 18559260.000 | 734 |
| Total functional difficulty | .6397 | .02271 | .5933 | .6862 | 210915458.000 | 16254 |
| # of times past 30 days (tasks around home) | 10.14 | .386 | 9.35 | 10.93 | 88591649.000 | 4242 |
| Total Bone Mineral Density (g/cm2) | 1.0948 | .00227 | 1.0902 | 1.0995 | 160615193.000 | 10019 |
| Bone alkaline phosphatase (ug/L) | 28.0806 | .58757 | 26.8789 | 29.2823 | 150174764.000 | 9969 |
| C-reactive protein(mg/dL) | .2882 | .00830 | .2713 | .3052 | 168922334.000 | 11899 |
| Fibrinogen (mg/dL) | 356.25 | 3.417 | 349.27 | 363.24 | 46614164.000 | 2247 |
| Helicobacter pylori (ISR) | .7404 | .02748 | .6814 | .7993 | 82867190.000 | 5870 |
| N-telopeptides (NTx) (nmol BCE) | 849.85 | 23.823 | 801.13 | 898.58 | 133679528.000 | 7719 |
| Average peak force (Newtons) | 266.1716 | 3.81554 | 258.3680 | 273.9753 | 23295304.000 | 1259 |
| Peak force (Newtons) | 338.95 | 4.599 | 329.55 | 348.36 | 23295304.000 | 1259 |
| Peak force velocity degree/seconds | 53.0039 | .71218 | 51.5473 | 54.4605 | 23295304.000 | 1259 |
| Hours worked last week at all jobs | 55.76 | 15.902 | 21.87 | 89.66 | 47092471.000 | 2304 |
| How long per day (minutes) (walked or bicycled) | 43.74 | 1.825 | 40.01 | 47.47 | 46396902.000 | 3617 |
| How long each time (minutes) (tasks around home) | 81.86 | 1.391 | 79.02 | 84.71 | 88416678.000 | 4233 |
| Number of times past 30 days (muscle strengthening activities) | 14.79 | .198 | 14.39 | 15.20 | 70035821.000 | 4685 |
| Total factor count | 1.5423 | .01567 | 1.5103 | 1.5744 | 210915458.000 | 16254 |

Tables shows population descriptive estimates for those not selected to models 1, 2, or 3.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| *Model 1 Descriptive Estimates* | | | | | | | |
|  | | Estimate | Standard Error | 95% Confidence Interval | | Population Size | Unweighted Count |
| Lower | Upper |
| Mean | Age at Screening | 55.53 | .313 | 54.89 | 56.17 | 39129484.000 | 2094 |
| Body mass index (kg/m2) | 30.9199 | .15265 | 30.6077 | 31.2321 | 38942758.000 | 2090 |
| Total percent fat (DXA) | 37.0581 | .19668 | 36.6559 | 37.4604 | 38799543.000 | 2081 |
| Estimated VO2max (ml/kg/min) | 38.9464 | .82935 | 37.2502 | 40.6427 | 6335380.000 | 266 |
| Family PIR | 3.1563 | .08123 | 2.9902 | 3.3225 | 35498091.000 | 1865 |
| Total pain count | 1.5355 | .07410 | 1.3839 | 1.6870 | 39129484.000 | 2094 |
| #wks have joint pain symptoms | 23.03 | 1.888 | 19.17 | 26.89 | 4023901.000 | 184 |
| Total functional difficulty | 1.4229 | .05840 | 1.3034 | 1.5423 | 39129484.000 | 2094 |
| # of times past 30 days (tasks around home) | 10.79 | .608 | 9.55 | 12.03 | 24335268.000 | 1109 |
| Bone mineral density (g/cm^2) | 1.1214 | .00358 | 1.1141 | 1.1287 | 38799543.000 | 2081 |
| Bone alkaline phosphatase (ug/L) | 15.6448 | .27831 | 15.0756 | 16.2140 | 32827983.000 | 1751 |
| C-reactive protein(mg/dL) | 0.4977 | .01890 | .4591 | .5364 | 33016958.000 | 1765 |
| Fibrinogen (mg/dL) | 372.74 | 3.457 | 365.67 | 379.81 | 31546751.000 | 1695 |
| Helicobacter pylori (ISR) | 1.0677 | .05746 | .9445 | 1.1910 | 17171411.000 | 960 |
| N-telopeptides (NTx) (nmol BCE) | 374.93 | 10.487 | 353.48 | 396.38 | 34175462.000 | 1832 |
| Average peak force (Newtons) | 302.3642 | 3.92549 | 294.3357 | 310.3928 | 19188241.000 | 1100 |
| Peak force (Newtons) | 386.10 | 4.535 | 376.82 | 395.37 | 19212277.000 | 1102 |
| Peak force velocity degree/seconds | 54.3349 | .63448 | 53.0373 | 55.6326 | 19212277.000 | 1102 |
| Hours worked last week at all jobs | 42.52 | .783 | 40.85 | 44.19 | 13269172.000 | 568 |
| How long per day (minutes) (walked or bicycled) | 42.89 | 2.336 | 38.11 | 47.67 | 8095282.000 | 424 |
| How long each time (minutes) (tasks around home) | 92.63 | 3.993 | 84.47 | 100.80 | 24335268.000 | 1109 |
| Number of times past 30 days (muscle strengthening activities) | 17.31 | 3.372 | 10.42 | 24.21 | 346848.000 | 25 |
| Total factor count | 3.5287 | .01749 | 3.4929 | 3.5645 | 39129484.000 | 2094 |

Table shows population descriptive estimates for Model 1. Model 1= ≥3 individual factors (Age ≥ 40 yrs., physical activity level = 1 or 2, BMI category ‘overweight’ or ‘obese,’ answer ‘no’ to muscle strengthening activities).

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| *Model 2 Descriptive Estimates* | | | | | | | |
|  | | Estimate | Standard Error | 95% Confidence Interval | | Population Size | Unweighted Count |
| Lower | Upper |
| Mean | Age at Screening | 54.77 | .526 | 53.70 | 55.85 | 28607325.000 | 1411 |
| Body Mass Index (kg/m2) | 31.4376 | .25941 | 30.9071 | 31.9682 | 28549280.000 | 1405 |
| Total percent fat (DXA) | 37.7533 | .29791 | 37.1440 | 38.3625 | 28505097.000 | 1399 |
| Estimated VO2max (ml/kg/min) | 40.5765 | .93825 | 38.6576 | 42.4955 | 4142232.000 | 145 |
| Family PIR | 4.5216 | .19724 | 4.1182 | 4.9250 | 28607325.000 | 1411 |
| Total pain count | 2.9129 | .07607 | 2.7573 | 3.0685 | 26168557.000 | 1271 |
| #wks have joint pain symptoms | 31.78 | 1.849 | 28.00 | 35.56 | 4159578.000 | 217 |
| Total functional difficulty | 2.6267 | .10712 | 2.4076 | 2.8458 | 28607325.000 | 1411 |
| # of times past 30 days (tasks around home) | 11.75 | .728 | 10.26 | 13.24 | 16947052.000 | 742 |
| Total Bone Mineral Density (g/cm^2) | 1.1144 | .00447 | 1.1052 | 1.1235 | 28505097.000 | 1399 |
| Bone alkaline phosphatase (ug/L) | 16.2564 | .33859 | 15.5639 | 16.9489 | 23724431.000 | 1176 |
| C-reactive protein(mg/dL) | 0.5577 | .03275 | .4907 | .6247 | 23749503.000 | 1178 |
| Fibrinogen (mg/dL) | 372.51 | 3.603 | 365.14 | 379.88 | 22117194.000 | 1124 |
| Helicobacter pylori (ISR) | 1.0427 | .04704 | .9418 | 1.1436 | 12827511.000 | 663 |
| N-telopeptides (NTx) (nmol BCE) | 371.32 | 12.207 | 346.35 | 396.29 | 24284261.000 | 1207 |
| Average peak force (Newtons) | 287.7328 | 4.69503 | 278.1304 | 297.3352 | 12945631.000 | 681 |
| Peak force (Newtons) | 368.80 | 5.007 | 358.56 | 379.04 | 12945631.000 | 681 |
| Peak force velocity degree/seconds | 53.4140 | 1.05263 | 51.2611 | 55.5668 | 12945631.000 | 681 |
| Hours worked last week at all jobs | 42.55 | 1.015 | 40.38 | 44.71 | 8531278.000 | 337 |
| How long per day (minutes) (walked or bicycled) | 45.81 | 5.208 | 35.16 | 56.47 | 5010316.000 | 251 |
| How long each time (minutes) (tasks around home) | 93.16 | 3.996 | 84.99 | 101.33 | 16918877.000 | 740 |
| Number of times past 30 days (muscle strengthening activities) | 14.78 | 2.225 | 10.23 | 19.34 | 304266.000 | 11 |
| Total factor count | 4.8070 | .01601 | 4.7743 | 4.8397 | 28607325.000 | 1411 |

Table shows population descriptive estimates for Model 2. Model 2= Model 1 + low back pain (During the past 3 months], did {you/SP} have low back pain?).

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| *Model 3 Descriptive Estimates* | | | | | | | |
|  | | Estimate | Standard Error | 95% Confidence Interval | | Population Size | Unweighted Count |
| Lower | Upper |
| Mean | Age at Screening | 55.80 | .606 | 54.56 | 57.03 | 21442668.000 | 1033 |
| Body Mass Index (kg/m2) | 31.8292 | .26353 | 31.2902 | 32.3681 | 21384623.000 | 1027 |
| Total percent fat (DXA) | 38.7077 | .23375 | 38.2296 | 39.1858 | 21340440.000 | 1021 |
| Estimated VO2max (ml/kg/min) | 39.8928 | 1.16317 | 37.5139 | 42.2718 | 2095033.000 | 68 |
| Family PIR | 2.8690 | .08374 | 2.6978 | 3.0403 | 19717072.000 | 937 |
| Total pain count | 6.0325 | .23979 | 5.5420 | 6.5229 | 21442668.000 | 1033 |
| #wks have joint pain symptoms | 31.92 | 1.837 | 28.16 | 35.67 | 4140312.000 | 215 |
| Total functional difficulty | 3.1526 | .13469 | 2.8771 | 3.4281 | 21442668.000 | 1033 |
| # of times past 30 days (tasks around home) | 11.82 | .876 | 10.03 | 13.61 | 12682795.000 | 560 |
| Total Bone Mineral Density (g/cm^2) | 1.1079 | .00360 | 1.1005 | 1.1153 | 21340440.000 | 1021 |
| Bone alkaline phosphatase (ug/L) | 16.2457 | .39134 | 15.4453 | 17.0461 | 17489803.000 | 843 |
| C-reactive protein(mg/dL) | .6102 | .03969 | .5290 | .6914 | 17498019.000 | 844 |
| Fibrinogen (mg/dL) | 376.26 | 4.093 | 367.89 | 384.63 | 16599731.000 | 811 |
| Helicobacter pylori (ISR) | 1.0445 | .07003 | .8943 | 1.1947 | 9172443.000 | 459 |
| N-telopeptides (NTx) (nmol BCE) | 365.15 | 15.240 | 333.98 | 396.32 | 18008699.000 | 870 |
| Average peak force (Newtons) | 284.2546 | 5.39662 | 273.2172 | 295.2919 | 10202440.000 | 506 |
| Peak force (Newtons) | 364.34 | 5.254 | 353.60 | 375.09 | 10202440.000 | 506 |
| Peak force velocity degree/seconds | 52.7408 | 1.25778 | 50.1683 | 55.3132 | 10202440.000 | 506 |
| Hours worked last week at all jobs | 42.09 | 1.104 | 39.74 | 44.45 | 6336435.000 | 247 |
| How long per day (minutes) (walked or bicycled) | 48.55 | 7.283 | 33.66 | 63.45 | 3635455.000 | 174 |
| How long each time (minutes) (tasks around home) | 95.52 | 4.803 | 85.70 | 105.35 | 12682795.000 | 560 |
| Number of times past 30 days (muscle strengthening activities) | 14.52 | 2.932 | 8.52 | 20.52 | 224902.000 | 7 |
| Total factor count | 5.0489 | .00780 | 5.0329 | 5.0648 | 21442668.000 | 1033 |

Table shows population descriptive estimates for Model 3. Model 3= Model 2 + > 1 region-specific pain point

*Model Regression*

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | | | | | | | *Age-Adjusted* | | | |
|  | |  |  |  | Odds Ratio | 95% Confidence Interval | | |  | 95% Confidence Interval | | |
|  | Lower | Upper | | Odds Ratio | Lower | Upper | | |
| Model 1 | |  |  |  | 2.237\* | 1.714 | 2.920 | | 0.928 | 0.713 | 1.208 | | |
| Model 2 | |  |  |  | 2.936\* | 2.064 | 4.178 | | 1.557\* | 1.111 | 2.182 | | |
| Model 3 | |  |  |  | 4.043\* | 2.877 | 5.681 | | 2.145\* | 1.540 | 2.987 | | |

Table shows odds ratios for membership to each model. Dependent variable: health problems causing difficulty from bone/joint injury. \*Significant at p<0.01. Model 1: ≥3 lifestyle factors. (Age ≥ 40 yrs., physical activity level = 1 or 2, BMI category ‘overweight’ or ‘obese,’ answer ‘no’ to muscle-strengthening activities)

Model 2: Model 1 + low back pain (During the past 3 months], did {you/SP} have low back pain?)

Model 3: Model 2 + > 1 region-specific pain point

*ROC Curves of Pain and Functional Difficulty Count by Selection to At-Risk Group*

img.eps

**Reference Line**

**Total Pain**

**Total Functional Difficulty**

Graph shows ROC curve for total pain and total functional difficulty in respondents selected for the following injury factors: BMI ≥ 30 kg/m2, age ≥ 40 years, muscle strengthening activities = ‘No,’ physical activity level = {you sit/he/she sits} during the day and {do/does} not walk about very much, low back pain = ‘Yes.’

|  |  |  |  |
| --- | --- | --- | --- |
| *ROC Classifier Evaluation Metrics (for Figure 1)* | | | |
| Test Result Variable(s) | Gini Index | K-S Statistics | |
| Max K-S | Cutoff |
| Total pain count | .657 | .606 | .5000 |
| Total functional difficulty | .691 | .614 | .5000 |

Table displays inequality index (Gini), distribution comparison, and cut-off values for the classifier (selected to injury factor group).

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| *ROC Classifier Evaluation Metrics (for Figure 2)* | | | | |
| Test Result Variable(s) | Gender | Gini Index | K-S Statistics | |
| Max K-S | Cutoff |
| Total pain count | = Male | .588 | .560 | .5000 |
| = Female | .690 | .625 | .5000 |
| Total functional difficulty | = Male | .651 | .590 | .5000 |
| = Female | .712 | .629 | .5000 |

Table displays inequality index (Gini), distribution comparison, and cut-off values for the classifier (selected to injury factor group) by sex.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| *Independent-Group Area Difference Under the ROC Curve (for Figure 2)* | | | | | | |
| Test Result Variable(s) | Asymptotic | | AUC Difference | Std. Error Difference | Asymptotic 95% Confidence Interval | |
| z | Sig. (2-tail) | Lower Bound | Upper Bound |
| Total pain count | -1.594 | .111 | -.051 | .032 | -.114 | .012 |
| Total functional difficulty | -1.007 | .314 | -.031 | .030 | -.090 | .029 |

*Note:* Table displays Z-test statistics for sex group differences in area under the ROC curve for injury factor group selection as a classifier for pain and functional difficulty count.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| *Area Under the ROC Curve* | | | | | |
| Test Result Variable(s)  Unweighted N=242 | Area | Std. Error | Asymptotic Sig. | Asymptotic 95% Confidence Interval | |
| Lower Bound | Upper Bound |
| Total pain count | .829 | .015 | .000 | .799 | .858 |
| Total functional difficulty | .845 | .014 | .000 | .817 | .874 |

Graph/table shows ROC curve for total pain and total functional difficulty in respondents selected for the following injury factors: BMI ≥ 30 kg/m2, age ≥ 40 years, muscle strengthening activities = ‘No,’ physical activity level = {you sit/he/she sits} during the day and {do/does} not walk about very much, low back pain = ‘Yes.’

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| *Area Under the ROC Curve by Sex* | | | | | | |
| Test Result Variable(s) | Sex | Area | Std. Error | Asymptotic Sig. | Asymptotic 95% Confidence Interval | |
| Lower Bound | Upper Bound |
| Total pain count | Male (n=86) | .794 | .027 | .000 | .740 | .847 |
| Female (n=156) | .845 | .017 | .000 | .811 | .879 |
| Total functional difficulty | Male (n=86) | .825 | .025 | .000 | .776 | .874 |
| Female (n=156) | .856 | .017 | .000 | .822 | .890 |

*Note:* Graph/table shows ROC curve comparison by sex for total pain and total functional difficulty selected for the following injury factors: BMI ≥ 30 kg/m2, age ≥ 40 years, muscle strengthening activities = ‘No,’ physical activity level = {you sit/he/she sits} during the day and {do/does} not walk about very much, low back pain = ‘Yes.’

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| *Independent-Group Area Difference Under the ROC Curve* | | | | | | |
| Test Result Variable(s) | Asymptotic | | AUC Difference | Std. Error Difference | Asymptotic 95% Confidence Interval | |
| z | Sig. (2-tail) | Lower Bound | Upper Bound |
| Total pain count | -1.594 | .111 | -.051 | .032 | -.114 | .012 |
| Total functional difficulty | -1.007 | .314 | -.031 | .030 | -.090 | .029 |

*Case-Control Covariate Differences*

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Health problems causing difficulty from bone/joint injury count (N=934) | Control (n=467) | | | | | Injury (n=467) | | | | |  | | |
|  |  | Median | IQR |  | |  | Median | IQR | Median Difference | |  |
| Age at screening |  |  | 33.00 | 35 |  | |  | 57.00 | 27 | 24.00 | |  |
| Body mass index (kg/m2) |  |  | 24.33 | 9.77 |  | |  | 28.8300 | 8.68 | 4.50 | |  |
| Total percent fat (DXA) |  |  | 32.4000 | 13.90 |  | |  | 38.1000 | 14.10 | 5.70 | |  |
| Estimated VO2max (ml/kg/min) |  |  | 40.3300 | 11.29 |  | |  | 38.20 | 14.02 | -2.13 | |  |
| Family PIR |  |  | 2.4000 | 3.20 |  | |  | 1.85 | 2.95 | -0.55 | |  |
| Total pain count |  |  | 0.0000 | 1.00 |  | |  | 4.00 | 7.00 | 4.00 | |  |
| #wks have joint pain symptoms |  |  | 8.00 | 46 |  | |  | 52.00 | 35 | 44.00 | |  |
| Total functional difficulty |  |  | 0.0000 | 1.00 |  | |  | 5.00 | 5.00 | 5.00 | |  |
| Total Bone Mineral Density (g/cm2) |  |  | 1.112 | 0.18 |  | |  | 1.092 | 0.19 | -0.02 | |  |
| Bone alkaline phosphatase (ug/L) |  |  | 16.20 | 9.60 |  | |  | 15.20 | 8.50 | -1.00 | |  |
| C-reactive protein (mg/dL) |  |  | 0.1700 | 0.35 |  | |  | 0.29 | 0.47 | 0.12 | |  |
| Fibrinogen (mg/dL) |  |  | 356.00 | 97.00 |  | |  | 369.00 | 91.00 | 13.00 | |  |
| Helicobacter pylori (ISR) |  |  | 0.27 | 1.03 |  | |  | 0.4200 | 1.72 | 0.15 | |  |
| N-telopeptides (NTx) (nmol BCE) |  |  | 381.00 | 600.00 |  | |  | 318.00 | 348.00 | -63.00 | |  |
| Average peak force (Newtons) |  |  | 254.80 | 134.60 |  | |  | 238.50 | 112.30 | -16.30 | |  |
| Peak force (Newtons) |  |  | 316.00 | 173.00 |  | |  | 313.00 | 169.00 | -3.00 | |  |
| Peak force velocity (degree/seconds) |  |  | 60.75 | 1.00 |  | |  | 60.7500 | 2.75 | 0.00 | |  |
| Hours worked last week at all jobs |  |  | 40.00 | 18.00 |  | |  | 36.00 | 20.00 | -4.00 | |  |
| How long per day (minutes) (walked or bicycled) |  |  | 30.00 | 45.00 |  | |  | 30.00 | 25 | 0.00 | |  |
| How long each time (minutes) (tasks around home) |  |  | 60.00 | 90.00 |  | |  | 60.00 | 90.00 | 0.00 | |  |
| Number of times past 30 days (muscle strengthening activities) |  |  | 13.00 | 8.00 |  | |  | 13.00 | 12.00 | 0.00 | |  |
| Total factor count |  |  | 2.0000 | 3.00 |  | |  | 4.0000 | 1.00 | 2.00 | |  |

Table shows covariate values and median differences between the case-control groups.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | *Adjusted Odds Ratios for Selection to the Injury Group* | | | | | | | | | |
|  | |  | Units of Change | | Odds Ratio | | 95% Confidence Interval | | | |
|  | Lower | | Upper | |
| Age at screening | |  |  | 24.00 | | 1.16 | | 0.673 | | 1.995 |
| Body mass index (kg/m2) | |  |  | 4.50 | | 1.01 | | 0.735 | | 1.39 |
| Bone alkaline phosphatase (ug/L) | |  |  | 1.00 | | 0.998 | | 0.967 | | 1.03 |
| Total percent fat (DXA) | |  |  | 5.70 | | 1.04 | | 0.813 | | 1.33 |
| Total pain count | |  |  | 4.00 | | 1.22 | | 0.731 | | 2.05 |
| Total functional difficulty | |  |  | 5.00 | | 8.57\* | | 3.80 | | 19.32 |
| N-telopeptides (NTx) (nmol BCE) | |  |  | 63.00 | | 0.99 | | 0.955 | | 1.027 |
| Total factor count | |  |  | 2.00 | | 1.42 | | 0.748 | | 2.70 |
|  | Dependent Variable: injury group. Odds ratios were adjusted for age, BMI, BAP, NTx, TPF, total functional difficulty, total pain, and total factors. Total factors included age ≥ 40 year, BMI ≥ 25 kg/m2, PAL = {you sit/he/she sits} during the day and {do/does} not walk about very much OR {you stand or walk/he/she stands or walks} about a lot during the day, but {do/does}not have to carry or lift things very often, no muscle strengthening activities, veteran/military status, and low back pain. \*Significant at p<0.01.   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | |  |  |  |  |  | | --- | --- | --- | --- | --- | | *Principal Component Structure Matrix* | | | | | |  | Component | | | | | 1 | 2 | 3 | 4 | | Body mass index (kg/m2) | -0.038 | 0.321 | -0.709 | 0.076 | | Age at screening | 0.071 | -0.716 | -0.191 | 0.243 | | Bone alkaline phosphatase (ug/L) | 0.603 | -0.205 | -0.002 | 0.039 | | N-telopeptides (NTx) (nmol BCE) | 0.604 | 0.336 | 0.175 | -0.074 | | Avg level of physical activity each day | -0.144 | 0.327 | 0.668 | 0.083 | | Low back pain | 0.090 | 0.687 | -0.195 | 0.104 | | Muscle strengthening activities | -0.404 | 0.014 | 0.373 | -0.618 | | Veteran/Military status | 0.198 | 0.077 | -0.211 | -0.810 | | Family income to poverty ratio tercile | -0.675 | -0.035 | 0.250 | -0.011 | | Only cases for which ‘Injury=Yes’ are used in the analysis phase. KMO = 0.55. Bartlett's test of sphericity: p < 0.001. Rotation method: Oblimin with Kaiser Normalization. | | | | | |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | *Odds Ratios for Bone/Joint Injury by Pain Count, Functional Difficulty Count, and Total Injury Factors* | | | | | | | Test Variables | |  | Odds Ratio | 95% Confidence Interval | | | Lower | Upper | | Total pain |  |  | 1.146\* | 1.114 | 1.178 | | Total functional difficulty |  |  | 1.405\* | 1.355 | 1.457 | | Total factors |  |  | 2.024\* | 1.867 | 2.194 | | Dependent variable: health problems causing difficulty from bone/joint injury. Total injury factors included age ≥ 40 years, BMI ≥ 25 kg/m2, PAL = {you sit/he/she sits} during the day and {do/does} not walk about very much OR {you stand or walk/he/she stands or walks} about a lot during the day, but {do/does}not have to carry or lift things very often, no muscle strengthening activities, veteran/military status, and low back pain.\*Significant at p<0.01. | | | | | | | | | | | | | | | |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| *Underlying Bone Condition by Case-Control Group* | | | | | | |
| Ever told had osteoporosis/brittle bones | | | | Case control group | | |
| Control | Injury | Total |
| No | Population Size | Estimate | | 4417414.000 | 7364286.000 | 11781700.000 |
| Standard Error | | 396438.433 | 742003.472 | 912308.000 |
| 95% Confidence Interval | Lower | 3606606.366 | 5846718.505 | 9915820.636 |
| Upper | 5228221.634 | 8881853.495 | 13647579.364 |
| Unweighted Count | | 206 | 395 | 601 |
| % within Ever told had osteoporosis/brittle bones | Estimate | | 37.5% | 62.5% | 100.0% |
| Standard Error | | 2.8% | 2.8% | 0.0% |
| 95% Confidence Interval | Lower | 31.9% | 56.6% | 100.0% |
| Upper | 43.4% | 68.1% | 100.0% |
| Unweighted Count | | 206 | 395 | 601 |
| % within case control group | Estimate | | 95.6% | 83.8% | 87.9% |
| Standard Error | | 2.3% | 1.8% | 1.4% |
| 95% Confidence Interval | Lower | 87.8% | 79.8% | 84.6% |
| Upper | 98.5% | 87.1% | 90.5% |
| Unweighted Count | | 206 | 395 | 601 |
| % of Total | Estimate | | 32.9% | 54.9% | 87.9% |
| Standard Error | | 2.7% | 2.3% | 1.4% |
| 95% Confidence Interval | Lower | 27.7% | 50.2% | 84.6% |
| Upper | 38.7% | 59.6% | 90.5% |
| Unweighted Count | | 206 | 395 | 601 |
| Yes | Population Size | Estimate | | 203886.000 | 1425338.000 | 1629224.000 |
| Standard Error | | 110013.343 | 258392.258 | 269218.731 |
| 95% Confidence Interval | Lower | -21116.550 | 896866.494 | 1078609.872 |
| Upper | 428888.550 | 1953809.506 | 2179838.128 |
| Unweighted Count | | 7 | 66 | 73 |
| % within Ever told had osteoporosis/brittle bones | Estimate | | 12.5% | 87.5% | 100.0% |
| Standard Error | | 6.4% | 6.4% | 0.0% |
| 95% Confidence Interval | Lower | 4.1% | 67.7% | 100.0% |
| Upper | 32.3% | 95.9% | 100.0% |
| Unweighted Count | | 7 | 66 | 73 |
| % within case control group | Estimate | | 4.4% | 16.2% | 12.1% |
| Standard Error | | 2.3% | 1.8% | 1.4% |
| 95% Confidence Interval | Lower | 1.5% | 12.9% | 9.5% |
| Upper | 12.2% | 20.2% | 15.4% |
| Unweighted Count | | 7 | 66 | 73 |
| % of Total | Estimate | | 1.5% | 10.6% | 12.1% |
| Standard Error | | 0.8% | 1.4% | 1.4% |
| 95% Confidence Interval | Lower | 0.5% | 8.1% | 9.5% |
| Upper | 4.5% | 13.9% | 15.4% |
| Unweighted Count | | 7 | 66 | 73 |
| Total | Population Size | Estimate | | 4621300.000 | 8789624.000 | 13410924.000 |
| Standard Error | | 423558.419 | 944052.659 | 1095939.198 |
| 95% Confidence Interval | Lower | 3755025.767 | 6858819.517 | 11169476.666 |
| Upper | 5487574.233 | 10720428.483 | 15652371.334 |
| Unweighted Count | | 213 | 461 | 674 |
| % within Ever told had osteoporosis/brittle bones | Estimate | | 34.5% | 65.5% | 100.0% |
| Standard Error | | 2.9% | 2.9% | 0.0% |
| 95% Confidence Interval | Lower | 28.8% | 59.3% | 100.0% |
| Upper | 40.7% | 71.2% | 100.0% |
| Unweighted Count | | 213 | 461 | 674 |
| % within case control group | Estimate | | 100.0% | 100.0% | 100.0% |
| Standard Error | | 0.0% | 0.0% | 0.0% |
| 95% Confidence Interval | Lower | 100.0% | 100.0% | 100.0% |
| Upper | 100.0% | 100.0% | 100.0% |
| Unweighted Count | | 213 | 461 | 674 |
| % of Total | Estimate | | 34.5% | 65.5% | 100.0% |
| Standard Error | | 2.9% | 2.9% | 0.0% |
| 95% Confidence Interval | Lower | 28.8% | 59.3% | 100.0% |
| Upper | 40.7% | 71.2% | 100.0% |
| Unweighted Count | | 213 | 461 | 674 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| *Tests of Independence* | | | | | | |
|  | | Chi-Square | Adjusted F | df1 | df2 | Sig. |
| Ever told had osteoporosis/brittle bones \* case control group | Pearson | 19.874 | 7.385 | 1 | 29 | .011 |
| Likelihood Ratio | 23.001 | 8.547 | 1 | 29 | .007 |
| The adjusted F is a variant of the second-order Rao-Scott adjusted chi-square statistic. Significance is based on the adjusted F and its degrees of freedom. | | | | | | |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| *Measures of Association* | | | | |
|  | | Estimate | 95% Confidence Interval | |
| Lower | Upper |
| Ever told had osteoporosis/brittle bones \* case control group | Odds Ratio | 4.193 | 1.320 | 13.327 |
| Statistics are computed only for 2-by-2 tables with all cells observed. | | | | |

*Descriptive Estimates by Treatment Group*

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Ever treated for osteoporosis | | | Estimate | Standard Error | 95% Confidence Interval | | Unweighted Count |
| Lower | Upper |
| No | Mean | Age at Screening | 61.57 | 1.667 | 58.16 | 64.99 | 123 |
| Bone alkaline phosphatase (ug/L) | 15.9278 | 1.00187 | 13.8721 | 17.9835 | 94 |
| N-telopeptides (NTx) (nmol BCE) | 397.85 | 51.068 | 293.06 | 502.63 | 100 |
| Yes | Mean | Age at Screening | 66.51 | 1.292 | 63.86 | 69.16 | 302 |
| Bone alkaline phosphatase (ug/L) | 15.5739 | .74029 | 14.0550 | 17.0929 | 226 |
| N-telopeptides (NTx) (nmol BCE) | 286.28 | 23.268 | 238.53 | 334.02 | 232 |

*Mean Differences Between Case-Control Groups by Treatment Status*

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | | | | |  | |
| Case control group | | Ever treated for osteoporosis | N | Mean | Std. Deviation | Std. Error Mean | | p-value | |
| Control | Age at Screening | No | 33398 | 79.00 | .000 | .000 | |  | |
| Yes | 170488 | 62.95 | 16.863 | .041 | | <0.001 | |
| Bone alkaline phosphatase (ug/L) | No | 33398 | 15.0000 | .00000 | .00000 | |  | |
| Yes | 167141 | 11.6269 | 3.87592 | .00948 | | <0.001 | |
| N-telopeptides (NTx) (nmol BCE) | No | 33398 | 391.00 | .000 | .000 | |  | |
| Yes | 107972 | 315.44 | 286.382 | .872 | | <0.001 | |
| Injury | Age at Screening | No | 508802 | 62.89 | 15.217 | .021 | |  | |
| Yes | 910556 | 64.23 | 19.382 | .020 | | <0.001 | |
| Bone alkaline phosphatase (ug/L) | No | 427694 | 15.2036 | 4.07621 | .00623 | |  | |
| Yes | 546565 | 19.4637 | 7.72564 | .01045 | | <0.001 | |
| N-telopeptides (NTx) (nmol BCE) | No | 427694 | 575.14 | 556.759 | .851 | |  | |
| Yes | 521207 | 392.85 | 346.420 | .480 | | <0.001 | |

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| --- | --- | --- | --- | --- | --- | --- |
| *Ever treated for osteoporosis \* case control group* | | | | | | |
| Ever treated for osteoporosis | | | | case control group | | |
| control | injury | Total |
| No | Population Size | Estimate | | 33398.000 | 508802.000 | 542200.000 |
| Standard Error | | 33398.000 | 133875.970 | 143122.329 |
| 95% Confidence Interval | Lower | -34908.580 | 234994.899 | 249481.970 |
| Upper | 101704.580 | 782609.101 | 834918.030 |
| Unweighted Count | | 1 | 20 | 21 |
| % within Ever treated for osteoporosis | Estimate | | 6.2% | 93.8% | 100.0% |
| Standard Error | | 5.7% | 5.7% | 0.0% |
| 95% Confidence Interval | Lower | 0.9% | 66.7% | 100.0% |
| Upper | 33.3% | 99.1% | 100.0% |
| Unweighted Count | | 1 | 20 | 21 |
| % within case control group | Estimate | | 16.4% | 35.8% | 33.4% |
| Standard Error | | 9.7% | 6.2% | 5.5% |
| 95% Confidence Interval | Lower | 4.4% | 24.3% | 23.2% |
| Upper | 45.4% | 49.2% | 45.4% |
| Unweighted Count | | 1 | 20 | 21 |
| % of Total | Estimate | | 2.1% | 31.3% | 33.4% |
| Standard Error | | 1.9% | 5.5% | 5.5% |
| 95% Confidence Interval | Lower | 0.3% | 21.3% | 23.2% |
| Upper | 13.1% | 43.6% | 45.4% |
| Unweighted Count | | 1 | 20 | 21 |
| Yes | Population Size | Estimate | | 170488.000 | 910556.000 | 1081044.000 |
| Standard Error | | 82532.966 | 179951.559 | 176963.152 |
| 95% Confidence Interval | Lower | 1689.132 | 542513.737 | 719113.716 |
| Upper | 339286.868 | 1278598.263 | 1442974.284 |
| Unweighted Count | | 6 | 45 | 51 |
| % within Ever treated for osteoporosis | Estimate | | 15.8% | 84.2% | 100.0% |
| Standard Error | | 7.6% | 7.6% | 0.0% |
| 95% Confidence Interval | Lower | 5.5% | 62.5% | 100.0% |
| Upper | 37.5% | 94.5% | 100.0% |
| Unweighted Count | | 6 | 45 | 51 |
| % within case control group | Estimate | | 83.6% | 64.2% | 66.6% |
| Standard Error | | 9.7% | 6.2% | 5.5% |
| 95% Confidence Interval | Lower | 54.6% | 50.8% | 54.6% |
| Upper | 95.6% | 75.7% | 76.8% |
| Unweighted Count | | 6 | 45 | 51 |
| % of Total | Estimate | | 10.5% | 56.1% | 66.6% |
| Standard Error | | 5.0% | 7.4% | 5.5% |
| 95% Confidence Interval | Lower | 3.8% | 40.9% | 54.6% |
| Upper | 25.7% | 70.2% | 76.8% |
| Unweighted Count | | 6 | 45 | 51 |
| Total | Population Size | Estimate | | 203886.000 | 1419358.000 | 1623244.000 |
| Standard Error | | 110013.343 | 258323.051 | 269077.934 |
| 95% Confidence Interval | Lower | -21116.550 | 891028.039 | 1072917.834 |
| Upper | 428888.550 | 1947687.961 | 2173570.166 |
| Unweighted Count | | 7 | 65 | 72 |
| % within Ever treated for osteoporosis | Estimate | | 12.6% | 87.4% | 100.0% |
| Standard Error | | 6.5% | 6.5% | 0.0% |
| 95% Confidence Interval | Lower | 4.1% | 67.6% | 100.0% |
| Upper | 32.4% | 95.9% | 100.0% |
| Unweighted Count | | 7 | 65 | 72 |
| % within case control group | Estimate | | 100.0% | 100.0% | 100.0% |
| Standard Error | | 0.0% | 0.0% | 0.0% |
| 95% Confidence Interval | Lower | 100.0% | 100.0% | 100.0% |
| Upper | 100.0% | 100.0% | 100.0% |
| Unweighted Count | | 7 | 65 | 72 |
| % of Total | Estimate | | 12.6% | 87.4% | 100.0% |
| Standard Error | | 6.5% | 6.5% | 0.0% |
| 95% Confidence Interval | Lower | 4.1% | 67.6% | 100.0% |
| Upper | 32.4% | 95.9% | 100.0% |
| Unweighted Count | | 7 | 65 | 72 |

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| *Tests of Independence* | | | | | | |
|  | | Chi-Square | Adjusted F | df1 | df2 | Sig. |
| Ever treated for osteoporosis \* case control group | Pearson | 1.347 | 2.231 | 1 | 29 | .146 |
| Likelihood Ratio | 1.499 | 2.481 | 1 | 29 | .126 |
| The adjusted F is a variant of the second-order Rao-Scott adjusted chi-square statistic. Significance is based on the adjusted F and its degrees of freedom. | | | | | | |

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| *Measures of Association* | | | | |
|  | | Estimate | 95% Confidence Interval | |
| Lower | Upper |
| Ever treated for osteoporosis \* case control group | Odds Ratio | .351 | .079 | 1.552 |
| Statistics are computed only for 2-by-2 tables with all cells observed. | | | | |

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| *Odds Ratio for Functional Difficulty Count by E2 Level* | | | | | | | | | | | | | | | |
| Units of Change | | | | | | LowE2 | | Odds Ratio | | 95% Confidence Interval | | | | | |
| Lower | | | Upper | | |
| Total functional difficulty | | | 1.000 | | | Yes | | .909 | | .862 | | | .959 | | |
| Dependent Variable: LOWE2 (reference category = No) | | | | | | | | | | | | | | | |
| *Odds Ratio for Pain Count by E2 Level* | | | | | | | | | | | | | | | |
| Units of Change | | | | | LowE2 | | | Odds Ratio | | 95% Confidence Interval | | | | | |
| Lower | | | Upper | | |
| Total pain count | | 1.000 | | | Yes | | | .957 | | .919 | | | .996 | | |
| Dependent Variable: LOWE2 (reference category = No) | | | | | | | | | | | | | | | |
| *Odds Ratio for Functional Difficulty Count by FSH Level* | | | | | | | | | | | | | | | |
| Units of Change | | | | | | Low follicle stimulating hormone (< 14 IU/L) | | | | | | Odds Ratio | | | 95% Confidence Interval | | | |
| Lower | | | Upper |
| Total functional difficulty | | | 1.000 | | | Yes | | | | | | .798 | | | .709 | | | .898 |
| Dependent Variable: Low follicle stimulating hormone (< 14 IU/L) (reference category = No) | | | | | | | | | | | | | | | | | | |