Using this model to get initial results

STILL modeling PA as restricted cubic spline and polygenic score enters the model as a linear coefficient.

Note: This is NOT age-specific, although it will have to be in the actual analysis (thinking 65 vs 75)

Interpretation:

In order to make it more interpretable, I compare quintiles of genetic risk and physical activity. I treat 20th percentile physical activity (as in 20th percentile of risk) and 20th percentile genetic risk as the reference group and compare these to PA and genetic risk at different levels.

**Table 1: Overview of Results**

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| --- | --- | --- | --- | --- |
| **Genetic Risk** | **Physical Activity Risk (Lower Risk = MORE Physical Activity)** | | | |
| *20th Percentile* | *40th Percentile* | *60th Percentile* | *80th Percentile* |
| *20th Percentile* | 1 (Reference) | 1.06 (95% CI: 0.97-1.16) | 1.12 (95% CI: 0.99-1.26) | 1.10 (95% CI: 0.98-1.24) |
| *40th Percentile* | 1.28 (95% CI: 1.24-1.32) | 1.36 (95% CI: 1.24-1.50) | 1.41 (95% CI: 1.25-1.59) | 1.43 (95% CI: 1.27-1.62) |
| *60th Percentile* | 1.59 (95% CI: 1.50-1.68) | 1.69 (95% CI: 1.52-1.88) | 1.75 (95% CI: 1.54-1.99) | 1.77 (95% CI: 1.56-2.02) |
| *80th Percentile* | 2.04 (95% CI: 1.87-2.22) | 2.17 (95% CI: 1.92-2.45) | 2.25 (95% CI: 1.95-2.60) | 2.28 (95% CI: 1.97-2.63) |

These results suggest that the composite risk from low physical activity and a high level of genetic risk is substantial. Compared to individuals at the 20th percentile of risk for overall physical activity and genetic risk, individuals at the 80th percentile of both face a 2.28 times greater hazard of experiencing a CAD event. If this same 80th/80th percentile risk individual had a physical activity risk in the 20th percentile, that risk falls to 2.04 times. Clearly, while genetic risk has a markedly stronger association with overall CAD risk than overall physical activity alone, they combine to produce the greatest overall risk.

My thoughts on results:

Considering that we aren’t even modeling by PA by age (BUT SHOULD BE), which will increase the strength of the association in older age groups, I think these results are encouraging. Genetic risk dominating overall physical activity alone coheres with the literature, which finds even with a multitude of lifestyle factors considered, genetic risk is about equally strongly associated with risk as this composite lifestyle score.

I next try to produce a visual representation of the results from Table 1 below. I will surely use a very similar figure in the actual paper, although I’d like to improve how these figures look stacked.

**Figure 1: Forest Plot of Genetic and Overall PA and Risk of Incident CAD**

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| --- |
| ***20th Percentile of PA vs 40th Percentile of PA***  Chart, box and whisker chart  Description automatically generated |
| ***20th Percentile of PA vs 60th Percentile of PA***  Chart, box and whisker chart  Description automatically generated |
| ***20th Percentile of PA vs 80th Percentile of PA***  Chart, box and whisker chart  Description automatically generated |