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| Appendix Table III. Static and Time-varying Covariates (TVC) |
| Static covariates | Covariates that can change from “unexposed” to “exposed” only once | Covariates that can alternate over time |
| Age | Ever knee injury | Body mass index |
| Enrollment wave | Hip rOA | Non-steroidal anti-inflammatory |
| Birth cohort | Ever smoker | drug use |
| Sex | Ever drinker | Moderate or vigorous physical activity |
| Race | Comorbidities | Depressive symptoms |
| Education | Cancer |  |
|  | Liver disease |  |
|  | Hypertension |  |
|  | Type 2 Diabetes |  |
|  | Cardiovascular disease |  |

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| rOA=radiographic osteoarthritis |

**Objectively Measured Variables**

**Age**: Age in years calculated from birth date to clinic date

**Enrollment wave**: Enrolled in original cohort (1991-1997) or in new enrollment (2003-2004)

**Birth cohort**: Cohort in 10 year increments

**Sex**: Male or female

**Knee rOA**: Radiographic knee OA, defined as a Kellgren-Lawrence grade of ≥2

**Hip rOA**: Radiographic hip OA, defined as a Kellgren-Lawrence grade of ≥2

**Body mass index**: kg/m2, calculated using clinically measured height and weight

**Self-reported Variables**

**Race**: Self-described ethnicity, African American or Caucasian

**Education**: Self-reported educational attainment, < no high school diploma or ≥ high school diploma

**Ever smoker**: Affirmative for, “Have you EVER smoked at least 100 cigarettes (or 5 packs) in your entire life?”

**Ever drinker**: Affirmative for, “Have you EVER consumed alcoholic beverages?”

**Comorbidities**: Affirmative for, “Has a doctor, nurse or other health professional told you that you now have, or have ever had…?”:

* Cancer
* Chronic gallbladder/liver trouble
* High blood pressure (hypertension)
* Diabetes or high blood sugar
* Cardiovascular disease is an affirmative response to a) heart attack, b) other heart trouble, c) stroke, d) circulation problems, and/or e) taking CVD-specific medications

**Depressive symptoms**: Center for Epidemiologic Studies Depression Scale (CES-D), categorized at <16 (no depression) and ≥16 (has depression) (time points T0-T2) or the Patient Reported Outcomes Measurement Information System Depression (PROMIS-D) score of ≥181 (time point T3)

**Knee pain**: Affirmative for, “On MOST days, do you have pain, aching, or stiffness in your LEFT/RIGHT KNEE?”

**Knee injury, affirmative for either**:

* “Have you ever injured your LEFT/RIGHT KNEE?”
* “Has a doctor ever told you that you had broken or fractured your LEFT KNEE?”

**Moderate or vigorous physical activity (MVPA)**: Self report of types, duration and frequency of physical activities. Categorized as meeting the Centers for Disease Control and Prevention’s recommended 75 minutes of vigorous or 150 minutes of moderate physical activity per week.

**Non-steroidal anti-inflammatory drug (NSAID) use**: Open-ended self-report of NSAID medications, for example aspirin, ibuprofen, naproxen and celecoxib

References

1. Kim J, Chung H, Askew RL, Park R, Jones SM, Cook KF, et al. Translating CESD-20 and PHQ-9 Scores to PROMIS Depression. *Assessment.* 2017;24(3):300-307.