**Propose a potential case of confounding or effect modification. Please do not use examples from SPH courses or published studies straight from literature / internet. Consider instead examples from your pasts experience or present research.**

* **State the research question clearly using words either for an EM situation or a confounding situation. Define the outcome, independent variable of interest and the potential effect modifier(s) for EM or confounder(s) for confounding.** 
  + **For the effect modifier(s) (EM)**

**–Qualify the consequences introduced when EM is not accounting for, using figures to illustrate as needed. Explain clearly how to investigate effect modification using appropriate regression methods.**

* + **For the confounding variable(s) (C)**

**–Qualify the consequences introduced when C is not adjusted, using a causal diagram, and figure to illustrate as needed. Explain clearly how you would examine the confounding using appropriate regression methods.**

**Group members are to come up with one common example together through discussion as a team. However, the project is to be submitted individually with a cover page that has your name and your group’s name. While the example is the same within a group, I do expect that presentation and description are different among group members. It is not a data analysis project rather an exercise of abstract thinking and conceptualization.**

**Use a cover page. Print your and your group’s name on the cover page. For the project report, there is a maximum two-pages limit including figures/tables. Please use 12pt font and double line space.**

**Clarity and creativity in presentation are part of grading considerations. Exceptional leadership and/or noncontributing of the group members should be noted in your report. Best team(s) may have the opportunity to present their project in class (10 minutes with Q and A).**

**(4% of total)**

**Group 7:**

**Qualify the consequences introduced when C is not adjusted, using a causal diagram, and figure to illustrate as needed:**

**How to examine confounding effects using regression method:**

**Each group should create a name for your group for identification purposes.**

Project description:

* P: adolescents who experienced knee pain for one month or more
* E: knee pain for more than one month (pain levels/categories, low, moderate, high)
* C: adolescents who did not experience knee pain
* O: physical activity (minutes/week) at 6-month and 12-month

Cohort study: followed up for 1-year

**Research question:** What are the effects of knee pain on physical activity

**Outcome**: physical activity (minutes) -continuous; Multiple Linear Regression

* **Main exposure of interest:**  levels of pain (low/moderate/high) (Alex: Perhaps we should give the pain scale that we are going to use, and a sample of how we are going to subdivide the scores into the categorical variable proposed here - Brief Pain Index, Pain and Disability Index, Visual Analog Scale - VAS is a popular one with kids. Or did you guys have another one in mind)
* **Independent/explanatory variables**: sex, age (continuous), **bmi** (continuous), kinesiophobia/stress, seasonality of physical activity (summer/winter)
* Potential EM(s)/confounders: seasonality of physical activity: winter vs. summer (categorical) (effect modifier); summer as the reference group (Alex: Confounders - depression/anxiety, pain castrophization behaviours, enrollment in a formal recreational exercise/sports program. Potential EM - presence of structural MSK issues (genu valgum, external tibial torsion, etc...)

Alternative

Population: Adolescents with knee-pain

Exposure: physical Activity

Outcome: Knee pain

Figure : DAG system

**Analysis: Multiple Linear Regression**

* STATA commands: xi regress

**How to assess effect modifier:**

* Test the effect of the interaction between seasonality of and knee pain on physical activity
* Summer vs. winter as the two strata (outcome in summer vs. outcome in winter)