**Sensitive analysis**

We identified an insignificant association between age and magnitude of effect for pain (adjusted R2 = -0.06, p= 0.82) in knee exercise, and if delete the data from Nakagawa 2008, pain (adjusted R2 = -0.07, p= 0.86)

We identified an insignificant association between Age and magnitude of effect for pain (adjusted R2=0.12, p= 0.11) in knee exercise, and if delete the data from Nakagawa 2008, pain (adjusted R2 = 0.16, p= 0.08)

We identified an insignificant association between hip abductor torque effect size and magnitude of effect for pain (adjusted R2=0.76, p= 0.08) in knee exercise and if delete the data from Nakagawa 2008, pain (adjusted R2 = 0.76, p= 0.23)

knee exercise-We identified an insignificant association between hip external rotation torque effect size and magnitude of effect for pain (adjusted R2=-0.47, p= 0.86) in knee exercise and if delete the data from Nakagawa 2008, pain (adjusted R2 = -0.41, p= 0.64)

We identified an insignificant association between hip external rotation torque effect size and magnitude of effect for pain (adjusted R2=-0.28, p= 0.76) in hip and knee exercise and if delete the data from Nakagawa 2008, pain (adjusted R2 = -0.48, p= 0.90)