

**Table A.2.c. Bone health and sedentary behaviour, children and adolescents**

**Questions:** What is the association between **sedentary behaviour** and health-related outcomes? Is there a dose response association (total volume and the frequency, duration and intensity of interruption)? Does the association vary by type and domain of sedentary behaviour?

**Population:** Children aged 5-under 18 years of age

**Exposure:** Greater volume, decreased frequency, duration or intensity of interruption of sedentary behaviour

**Comparison:** Lesser volume, increased frequency, duration or intensity of interruption of sedentary behaviour

**Outcome:** Bone health

**\*Importance:** CRITICAL

Bone health outcomes not reviewed in Australian 24-Hour Movement Guidelines for Children (5-12 years) and Young People (12-17 years) (26). **Red font denotes information from WHO update using review of existing systematic reviews.**

No. of studies/ Study design	Quality Assessment					Summary of findings	Certainty	US PAGAC evidence (27)
	Risk of bias	Inconsistency	Indirectness	Imprecision	Other			
No. of participants								
Mean age ranged between 2 and 24 years; most studies among school-aged children. Sedentary time was objectively measured by wearable monitors/accelerometers in 9/17 studies. SB was classified as <100 counts per minutes in all studies. Eight studies used only questionnaires to assess the type of SB including questions about average daily engagement in sedentary patterns such as time spent watching TV or using computers.								
17 observational studies <sup>a</sup>  n = NR	Serious risk of bias <sup>b</sup>	No serious inconsistency	No serious indirectness	Serious imprecision	Not all studies adjusted for MVPA in analyses	Koedijk et al. 2017 (11):  <b>Lower extremity bone outcomes:</b> Consistent evidence of a negative association between objectively measured total sedentary time and lower extremity bone outcomes in school-aged children, independent of MVPA.  <b>Lumbar spine bone outcomes:</b> No association observed between objectively measured total sedentary time and lumbar spine bone outcomes.  <b>Total body bone outcomes:</b> Consistent evidence of no association between objectively measured total sedentary time and total body bone outcomes in school-aged children.	VERY LOW <sup>c</sup>	<a href="#">4 prospective cohort studies</a>  Limited evidence suggests that sedentary behaviour is not related to bone health in children and adolescents. <b>PAGAC Grade: Limited.</b>

Abbreviations: MVPA = moderate-to-vigorous intensity physical activity; NR = not reported; SB = sedentary behaviour

<sup>a</sup>As determined by WHO

<sup>a</sup>Nine cross-sectional studies, six longitudinal prospective cohort studies, one longitudinal retrospective cohort study, and one case-control study.

<sup>b</sup>Only 3 of 17 studies were rated as high quality.

<sup>c</sup>The quality of evidence from observational studies could not be upgraded from "low" to "moderate" as there were serious limitations across studies and was downgraded from "low" to "very low" due to serious imprecision.