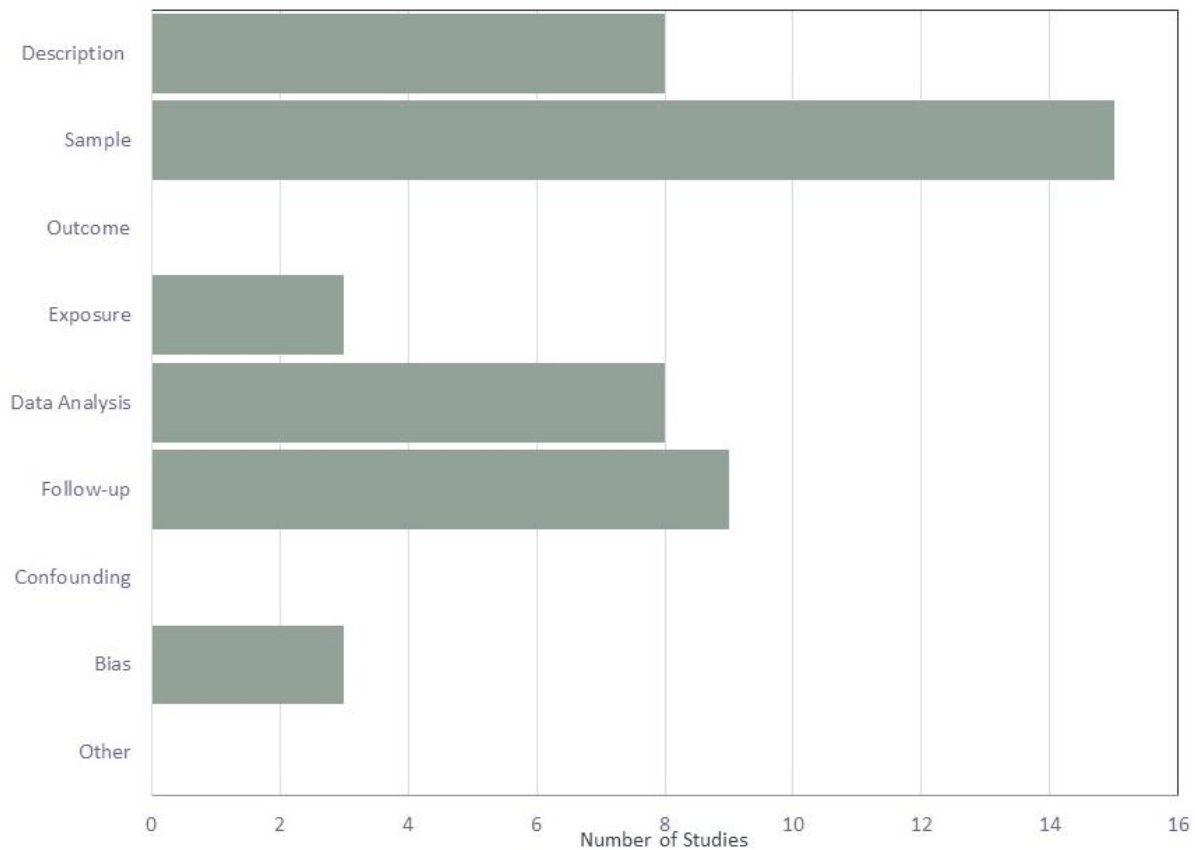


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**Appendix Figure 1.** Study limitations of school meal, fruit and vegetable snack, and physical activity interventions



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**Appendix Table 1.** Country, Degree of Urbanization, Setting, School Level, and Intervention Components

Characteristic	Number of Interventions	Intervention Name
<b>Country</b>		
Canada	1	1. Kahnawake Schools Diabetes Prevention Project <sup>34</sup>
Europe	6	1. The Copenhagen School Child Intervention Study <sup>40</sup> 2. The HEIA Study <sup>22-24</sup> 3. Healthy Children in Sound Communities – Germany <sup>44</sup> 4. Healthy Children in Sound Communities - Netherlands <sup>44</sup> 5. The CHILDREN study <sup>20</sup> 6. Healthy Primary School of the Future <sup>32,33</sup>
New Zealand	2	1. APPLE New Zealand <sup>35-37</sup> 2. Living 4 Life <sup>41</sup>
Iceland	1	1. Lifestyle of 7–9 Year-Old Study <sup>18,19</sup>
United States	14	1. Aventuras Para Niños Study <sup>16</sup> 2. CATCH BasicPlus <sup>42</sup> 3. CATCH BasicPlus Community <sup>42</sup> 4. CATCH Midwest <sup>43</sup> 5. CATCH multi-state <sup>17,46</sup> 6. CATCH El Paso <sup>30</sup> 7. Go For Health Program <sup>31</sup> 8. HOPS <sup>38,39</sup> 9. Know Your Body Program <sup>29</sup> 10. The Energy Balance 4 Kids with Play <sup>21</sup> 11. The Heart Smart Program <sup>25</sup> 12. The Pathways Study <sup>26</sup> 13. Wise Mind Healthy Eating and Exercise, 2007 <sup>27,28</sup> 14. Wise Mind Healthy Eating and Exercise, 2010 <sup>45</sup>
<b>Degree of urbanization</b>		
Urban	10	1. Aventuras Para Niños Study <sup>16</sup> 2. CATCH Multistate <sup>17,46</sup> 3. Go For Health Program <sup>31</sup> 4. Healthy Children in Sound Communities – German <sup>44</sup> 5. Healthy Children in Sound Communities – Netherlands <sup>44</sup> 6. Know Your Body <sup>29</sup> 7. Lifestyle of 7-9 Year-Old Study <sup>18,19</sup>

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		<ul style="list-style-type: none"> <li>8. The Copenhagen School Child Intervention Study<sup>40</sup></li> <li>9. The Energy Balance 4 Kids with Play<sup>21</sup></li> <li>10. The Heart Smart Program<sup>25</sup></li> </ul>
Urban and rural	6	<ul style="list-style-type: none"> <li>1. APPLE New Zealand<sup>35-37</sup></li> <li>2. CATCH BasicPlus<sup>42</sup></li> <li>3. CATCH BasicPlus Community<sup>42</sup></li> <li>4. CATCH El Paso<sup>30</sup></li> <li>5. HEIA Study<sup>22-24</sup></li> <li>6. The CHILDREN Study<sup>20</sup></li> </ul>
Rural area only	3	<ul style="list-style-type: none"> <li>1. CATCH Midwest<sup>43</sup></li> <li>2. Kahnawake Schools Diabetes Prevention Project<sup>34</sup></li> <li>3. The Pathways Study<sup>26</sup></li> </ul>
Not reported	5	<ul style="list-style-type: none"> <li>1. Healthy Primary School of the Future<sup>32,33</sup></li> <li>2. HOPS<sup>38,39</sup></li> <li>3. Living 4 Life<sup>41</sup></li> <li>4. Wise Mind Healthy Eating and Exercise, 2007<sup>27-28</sup></li> <li>5. Wise Mind Healthy Eating and Exercise, 2010<sup>45</sup></li> </ul>
<b>Setting</b>		
School only	7	<ul style="list-style-type: none"> <li>1. APPLE New Zealand<sup>35-37</sup></li> <li>2. CATCH BasicPlus<sup>42</sup></li> <li>3. Go For Health Program<sup>31</sup></li> <li>4. HEIA Study<sup>22-24</sup></li> <li>5. Know Your Body Program<sup>29</sup></li> <li>6. Lifestyle of 7-9 Year-Old Study<sup>18,19</sup></li> <li>7. The Copenhagen School Child Intervention Study<sup>40</sup></li> </ul>
School plus additional components outside of school setting (e.g., family newsletters, community events)	17	<ul style="list-style-type: none"> <li>1. Aventuras Para Niños Study<sup>16</sup></li> <li>2. CATCH El Paso<sup>30</sup></li> <li>3. CATCH BasicPlus Community<sup>42</sup></li> <li>4. CATCH Midwest<sup>43</sup></li> <li>5. CATCH, multi-state<sup>17,46</sup></li> <li>6. Healthy Children in Sound Communities – Germany<sup>44</sup></li> <li>7. Healthy Children in Sound Communities – Netherlands<sup>44</sup></li> <li>8. Healthy Primary School of the Future<sup>32,33</sup></li> <li>9. HOPS<sup>38,39</sup></li> <li>10. Kahnawake Schools Diabetes Prevention Project<sup>34</sup></li> <li>11. Living 4 Life<sup>41</sup></li> <li>12. The CHILDREN Study<sup>20</sup></li> <li>13. The Energy Balance 4 Kids with Play<sup>21</sup></li> </ul>

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		14. The Heart Smart Program <sup>25</sup> 15. The Pathways Study <sup>26</sup> 16. Wise Mind Healthy Eating and Exercise, 2007 <sup>27,28</sup> 17. Wise Mind Healthy Eating and Exercise, 2010 <sup>45</sup>
<b>School Level</b>		
Elementary (Kindergarten-fifth grade)	17	1. APPLE New Zealand <sup>35-37</sup> 2. Aventuras Para Niños Study <sup>16</sup> 3. CATCH El Paso <sup>30</sup> 4. CATCH BasicPlus <sup>42</sup> 5. CATCH BasicPlus Community <sup>42</sup> 6. CATCH Midwest <sup>43</sup> 7. CATCH, multi-state <sup>17,46</sup> 8. Go For Health Program <sup>31</sup> 9. Healthy Children in Sound Communities – Germany <sup>44</sup> 10. Healthy Children in Sound Communities – Netherlands <sup>44</sup> 11. HOPS <sup>38,39</sup> 12. Lifestyle of 7-9 Year-Old Study <sup>18,19</sup> 13. The CHILDREN Study <sup>20</sup> 14. The Copenhagen School Child Intervention Study <sup>40</sup> 15. The Energy Balance 4 Kids with Play <sup>21</sup> 16. The Heart Smart Program <sup>25</sup> 17. The Pathways Study <sup>26</sup>
Middle (sixth-eighth grade)	1	1. HEIA Study <sup>22-24</sup>
Elementary plus 6 <sup>th</sup> grade	5	1. Healthy Primary School of the Future <sup>32,33</sup> 2. Kahnawake Schools Diabetes Prevention Project <sup>34</sup> 3. Know Your Body Program <sup>29</sup> 4. Wise Mind Healthy Eating and Exercise, 2007 <sup>27,28</sup> 5. Wise Mind Healthy Eating and Exercise, 2010 <sup>45</sup>
Middle and High School Combined (sixth-twelfth grade)	1	1. Living 4 Life <sup>41</sup>
<b>Intervention Components</b>		
School Meal (Breakfast or Lunch)	17	1. CATCH BasicPlus <sup>42</sup> 2. CATCH BasicPlus Community <sup>42</sup> 3. CATCH El Paso <sup>30</sup>

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		<ol style="list-style-type: none"> <li>4. CATCH Multistate<sup>17,46</sup></li> <li>5. CATCH Midwest<sup>43</sup></li> <li>6. Go for Health Program<sup>31</sup></li> <li>7. HOPS<sup>38,39</sup></li> <li>8. Kahnawake Schools Diabetes Prevention Project<sup>34</sup></li> <li>9. Know Your Body Program<sup>29</sup></li> <li>10. Lifestyle of 7-9 Year-Old Study<sup>18-19</sup></li> <li>11. Living 4 Life<sup>41</sup></li> <li>12. The Copenhagen School Child Intervention Study<sup>40</sup></li> <li>13. The Energy Balance 4 Kids with Play<sup>21</sup></li> <li>14. The Heart Smart Program<sup>25</sup></li> <li>15. The Pathways Study<sup>26</sup></li> <li>16. Wise Mind Healthy Eating and Exercise, 2007<sup>27,28</sup></li> <li>17. Wise Mind Healthy Eating and Exercise, 2010<sup>45</sup></li> </ol>
Fruit and Vegetable Program	4	<ol style="list-style-type: none"> <li>1. APPLE New Zealand<sup>35-37</sup></li> <li>2. Aventuras Para Niños Study<sup>16</sup></li> <li>3. HEIA Study<sup>22-24</sup></li> <li>4. The CHILDREN Study<sup>20</sup></li> </ol>
Combination of School Meal and Fruit and Vegetable Program	3	<ol style="list-style-type: none"> <li>1. Healthy Children in Sound Communities – German<sup>44</sup></li> <li>2. Healthy Children in Sound Communities – Netherlands<sup>44</sup></li> <li>3. Healthy Primary School of the Future<sup>32,33</sup></li> </ol>
Physical Education Change	6	<ol style="list-style-type: none"> <li>1. CATCH El Paso<sup>30</sup></li> <li>2. CATCH Midwest<sup>43</sup></li> <li>3. CATCH Multistate<sup>17,46</sup></li> <li>4. The CHILDREN Study<sup>20</sup></li> <li>5. Go for Health Program<sup>31</sup></li> <li>6. The Heart Smart Program<sup>25</sup></li> </ol>
Physical Activity Opportunity	8	<ol style="list-style-type: none"> <li>1. Know Your Body Program<sup>29</sup></li> <li>2. Living 4 Life<sup>41</sup></li> <li>3. Wise Mind Healthy Eating and Exercise, 2010<sup>45</sup></li> <li>4. HOPS<sup>38,39</sup></li> <li>5. HEIA Study<sup>22-24</sup></li> <li>6. The Energy Balance 4 Kids with Play<sup>21</sup></li> <li>7. Wise Mind Healthy Eating and Exercise, 2007<sup>27-28</sup></li> <li>8. Healthy Primary School of the Future<sup>32,33</sup></li> </ol>
Combination of Physical Education	10	<ol style="list-style-type: none"> <li>1. APPLE New Zealand<sup>35-37</sup></li> <li>2. Aventuras Para Niños Study<sup>16</sup></li> <li>3. CATCH BasicPlus<sup>42</sup></li> </ol>

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and Physical Activity Opportunity		4. CATCH BasicPlus Community <sup>42</sup> 5. Healthy Children in Sound Communities, Germany <sup>44</sup> 6. Healthy Children in Sound Communities, Netherlands <sup>44</sup> 7. Kahnawake Schools Diabetes Prevention Project <sup>34</sup> 8. Lifestyle of 7-9 Year Old Program <sup>18,19</sup> 9. The Copenhagen School Child Intervention Study <sup>40</sup> 10. The Pathways Study <sup>26</sup>
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**Appendix Table 2.** Additional Dietary and Physical Activity Outcomes and Weight-related Outcomes

<b>Outcome</b>	<b>Result</b>
<b>Sugar-Sweetened Beverage (servings/d)</b>	
Number of interventions	6
Median change (range)	Relative change in amount/d: Decrease 13.3% (range: -29.2 to -4.0%) <sup>18,22,37</sup>
	Relative Change in frequency/d: Increase 7.1% (range: -9.0 to 15.4%) <sup>21,42</sup>
<b>Water (glasses/d)</b>	
Number of interventions	2
Change	No change <sup>16</sup>
	Increase: 0.7 servings/d <sup>37</sup>
<b>Low-Nutrient Food Index</b>	
Number of interventions	7 <sup>16,18,20,21,34,42</sup>
Change	Sweets/snacks/desserts/d: Decreased (beta -0.08) <sup>16</sup>
	Biscuits/cakes; chips/fries; candy grams/d: Increase 13.7 grams/d <sup>18</sup>
	Number of exchanges of sweets and beverages/d: Decrease 1.0 exchange/d <sup>20</sup>
	Salty or sweet snacks/d: No change <sup>21</sup>
	Sugar Consumption Index: Increase 0.11 <sup>34</sup>
	Unhealthy Foods Index: Range: Increase 0.1 to 0.7 <sup>42</sup>
<b>Composite Healthy Eating Index</b>	
Number of interventions	4
Change	Healthy Eating Index: Increase 2.6 <sup>28</sup>
	Composite Healthy Dietary Behaviors (number of d/wk): Increase: 0.19, p=0.04 <sup>32</sup>
	Healthy Food Index: Range: Increase 0.3 to 0.4 <sup>42</sup>
<b>Physical Activity During School Day</b>	
Number of interventions	4
Change	Percent class in MVPA: Increase 10.8 pct pts (Range: 8.2 to 28.5 pct pts) <sup>31,42</sup>
	Lunch time activity: Increase 4.9 pct pts <sup>41</sup>
<b>BMI z-score</b>	
Number of interventions	12
Median change (IQI)	10 studies: Decrease 0.07 (-0.19 to 0.02) <sup>20,21,24,33,36,39-41,43,45</sup>

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	1 study: Beta decrease 0.019 <sup>16</sup> 1 study: No significant effects <sup>27</sup>
<b>Percent Body Fat</b>	
Number of interventions	4
Change (range)	Increase 0.22 (-0.8 to 1.1) <sup>18,26,41,45</sup>
<b>Skinfold measures</b>	
Number of interventions	3
Change	Sum of tricep and subscapular skinfold: Range: Decrease 5.7 to Increase 0.2 mm <sup>17,34</sup>
	Sum of 4 skinfolds: Increase 1.5 mm <sup>40</sup>

CI, confidence interval; d, day; IQI, interquartile interval; Kcals, kilocalories; mm, millimeter; NR, not reported; NS, not significant; OR, Odds Ratio; oz, ounces; pct pts, percentage points; PR, prevalence ratio; serv, servings; wk, week