

# Identifying 'priority interventions' to improve physical activity and nutrition in early childhood and education care centres

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# Acknowledgement of Country

I would like to acknowledge the Traditional Custodians of the lands on which we meet today. I pay my respects to Elders past, present and emerging.



'Heart of a Child' – artwork by Worimi artist, Lara Went.



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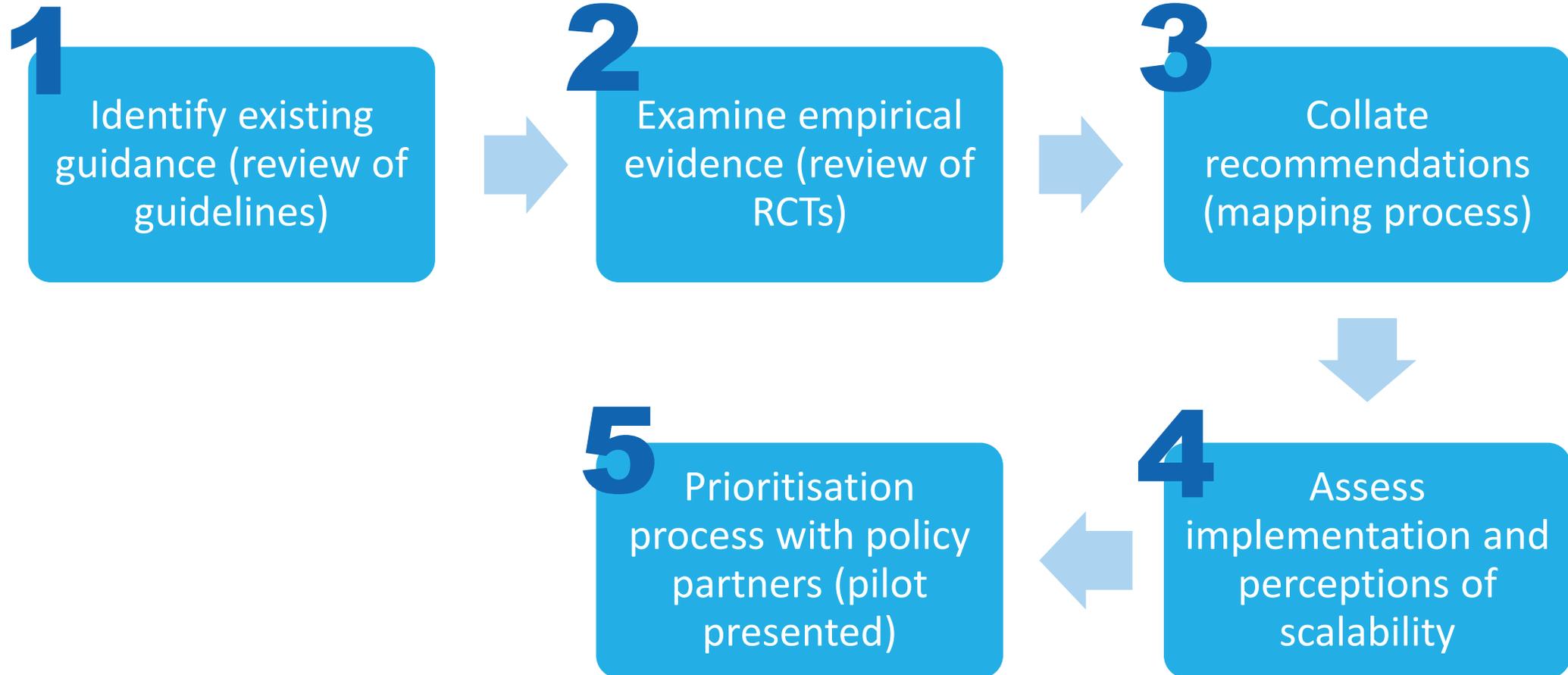


# Program of work

To identify 'priority' healthy eating and physical activity recommendations for early childhood education and care (ECEC) centres to improve population health



# Five step process



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# 1. Identify existing guidance ('best practice')

## Aim:

To identify common recommendations from ECEC-based healthy eating and physical activity guidelines in high income OECD countries

## Methods:

- Systematic review consistent with Cochrane methods
- Database search and grey literature searches
- Recommendations were qualitatively synthesised by 2 reviewers into broad ANGELO domains (physical, economic, political/policy and sociocultural)
- Quality assessments – AGREE-II tool



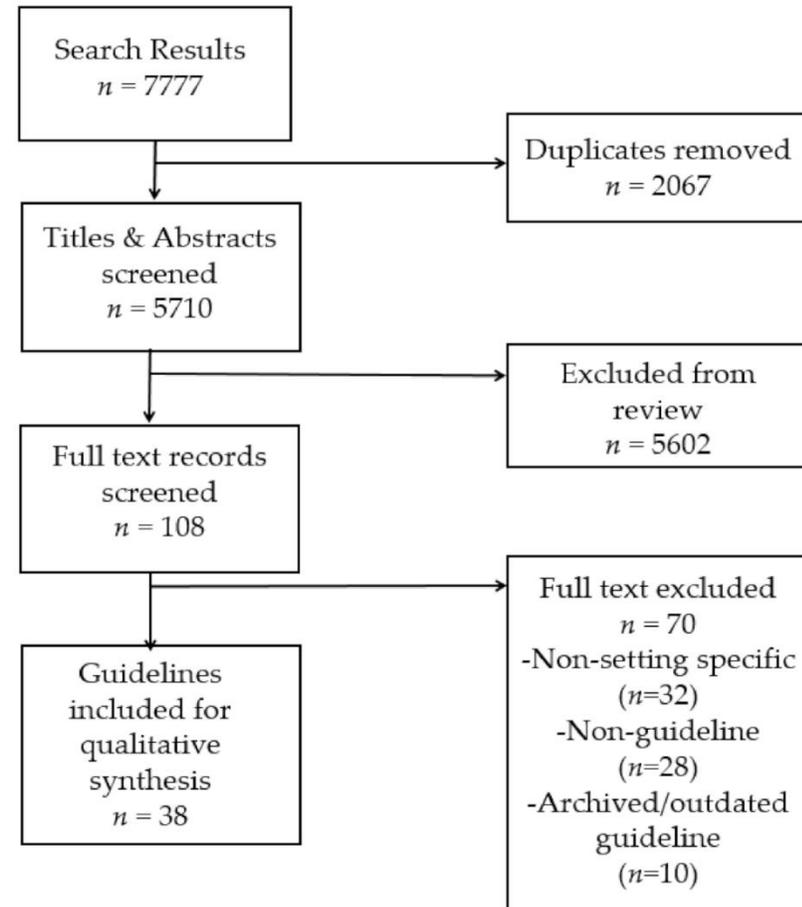
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# 1. Identify existing guidance cont.

## Results

- 38 guidelines were included from US, Australia, UK, New Zealand, Canada and Ireland
- Large consistencies across a number of recommendations



# Results: Healthy Eating

Table 2. Dietary behavior policies and practices within included guidelines ( $n = 38$ ).

| ANGELO *<br>Modifiable<br>Environment | Recommended Dietary Behavior Policy and Practice Themes  | Frequency of Recommendation                       |
|---------------------------------------|--|---|
| Physical                              | 1. Set Nutrition Standards For The Food And Beverages Available In Early Childhood Education And Care (ECEC) Setting                               | 30 [33–36,38–41,48–69]                            |
|                                       | 1.1. Nutrition standards, recommended serving sizes for foods, snacks, meals and beverages provided are aligned with national nutrition guidelines | 28 [33–36,38–41,49–60,62–69]                      |
|                                       | 1.2. Provide a variety of healthy foods from the main food groups in age appropriate portion sizes   | 28 [33–36,38–41,49–60,62–69]                      |
|                                       | 1.3. Specific standards for ECEC food service menus  | 18 [33–36,38,39,41,49,51,52,54,56,59,63,65–67,69] |
|                                       | 1.4. Water should be widely available to children at all times   | 23 [33–36,38,40,41,49,51,54–59,61–65,67–69]       |
|                                       | 1.5. Limit serves and types of sugar sweetened beverages (including fruit juice)   | 25 [33–36,38,40,41,48–52,54–56,58–61,63–65,67–69] |
|                                       | 1.6. Offer age appropriate milk and beverages (i.e., no tea, coffee or energy drinks)  | 22 [33–36,38,40,41,52,54–56,58–65,67–69]          |
|                                       | 1.7. Keep high energy, low nutrient foods (e.g., sweets, confectionary, high fat/salty snacks) out of the childcare                                | 10 [33,38,40,52,54,57,61,63,66,67]                |
| Policy                                | 2. Develop And Adopt A Healthy Eating Policy   | 3 [39,55,59]                                      |
|                                       | 2.1. Nutrition policy is reviewed (annually and/or by an expert i.e., dietitian)   | 2 [55,59]   |
|                                       | 2.2. Parents are involved in the development of the policy   | 2 [39,55]   |
|                                       | 2.3. Ensure staff are willing to working within the policy   | 1 [39]  |

# Results: Physical activity

Table 3. Physical activity and sedentary behavior policies and practices within included guidelines ( $n = 38$ ).

| ANGELO *<br>Modifiable<br>Environment | Recommended Physical Activity Policy and Practice Themes  | Frequency of Recommendation                       |
|---------------------------------------|---|---|
| Physical;<br>Sociocultural            | 1. Provide Opportunities For Children To Be Physically Active (More Is Better)                                | 28 [17,35,42–57,59–63,65,67–69]                   |
|                                       | 1.1. Ensure physical activity is incorporated into daily routines and formal childcare curriculum             | 5 [42,52–54,63]                                   |
|                                       | 1.2. Include at least 180 min of physical activity of any intensity, spread throughout the day                | 16 [42,43,45,48,50,52,53,55,57,59,60,62,65,67–69] |
|                                       | 1.3. For children 3–4 years, include at least 60 min of moderate-to-vigorous physical activity during the day | 12 [43,45,48,51,52,54,59,61,62,65,68,69]          |
|                                       | 1.4. Include opportunities for adult-led, structured physical activity  | 10 [42,44,47,48,51,53,59,63,65,69]                |
|                                       | 1.5. Include opportunities for unstructured physical activity, free play (play-time)                          | 9 [42,44,46–49,63,65,69]                          |
|                                       | 1.6. Provide daily opportunities for activity through outdoor playtime (should be supervised)                 | 11 [17,42,44,49,51,53,55,56,61,65,69]             |
|                                       | 1.7. Provide opportunities for children to develop and practice gross motor and movement skills               | 4 [49,51,62,63]                                   |
|                                       | 1.8. Include culturally appropriate physical activities   | 1 [63]  |
| Policy;<br>Sociocultural              | 2. Develop And Adopt Policies For Physical Activity And Physical Activity Education Programs                  | 3 [33,53,69]                                      |
|                                       | 2.1. Engage staff and parent support for physical activity standards  | 1 [53]  |
|                                       | 2.2. Seek consultation from experts annually on the physical activity programs delivered in the childcare     | 1 [53]  |

# 2. Examine the empirical evidence: Healthy Eating

## Primary aim:

To synthesise findings from ECEC-based nutrition intervention evaluated via randomised controlled trials (RCT) on dietary outcomes

## Secondary outcomes:

Impact on BMI, quality of life, other outcomes and cost.

## Method:

Cochrane systematic review

## Inclusion criteria:

- RCTs that measure the impact of ECEC-based nutrition interventions on any dietary outcome.



# Preliminary findings: Healthy Eating

58 randomised controlled trials describing 52 unique interventions

| Number of studies | Outcomes                   | Meta-analysis SMD or MD or RR (95 % CI) | What does this mean?                                  |
|-------------------|----------------------------|---|---|
| 6                 | Diet Quality               | 0.34 (0.04, 0.65)                       | 25.1 improvement in diet quality measure (out of 100) |
| 10                | Fruit                      | 0.12 (0.04, 0.19)                       | 24 (6 - 29) g   |
| 12                | Vegetable                  | 0.12 (-0.02, 0.26)                      | 10 (-0.2 - 20) g                                      |
| 19                | BMI z-score                | -0.03 (-0.09, 0.03)                     |   |
| 6                 | Risk of overweight/obesity | 0.75 (0.63, 0.89)                       |   |



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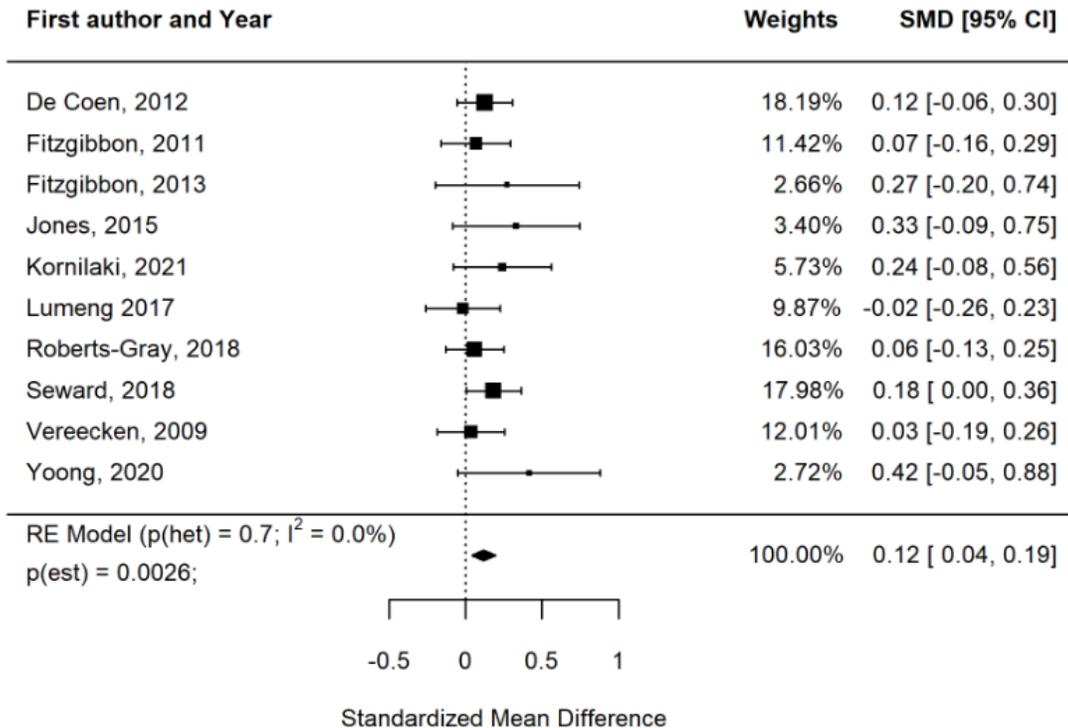
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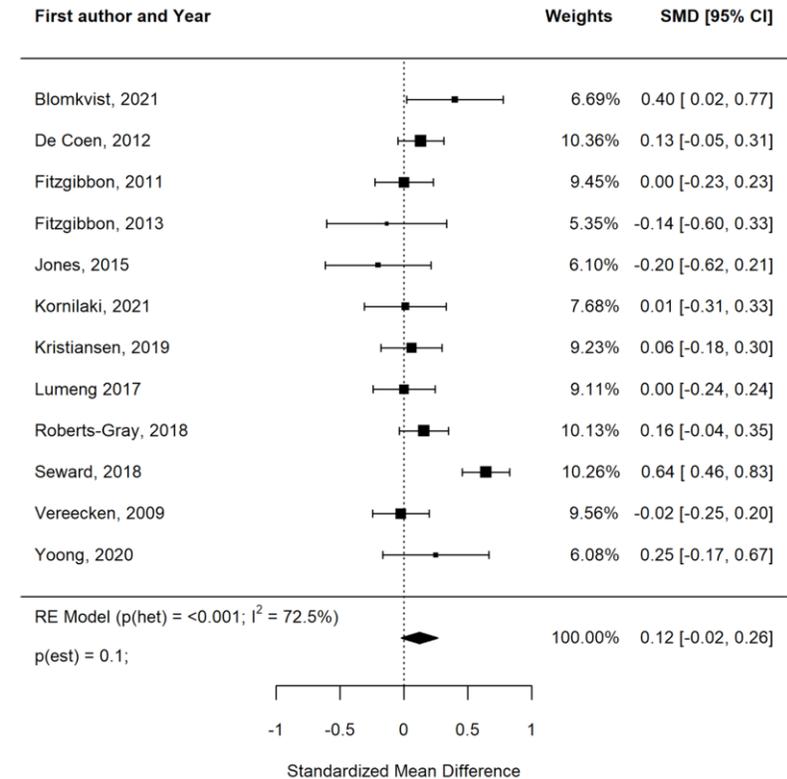
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# Draft synthesis: Fruit and Vegetables

## Fruit

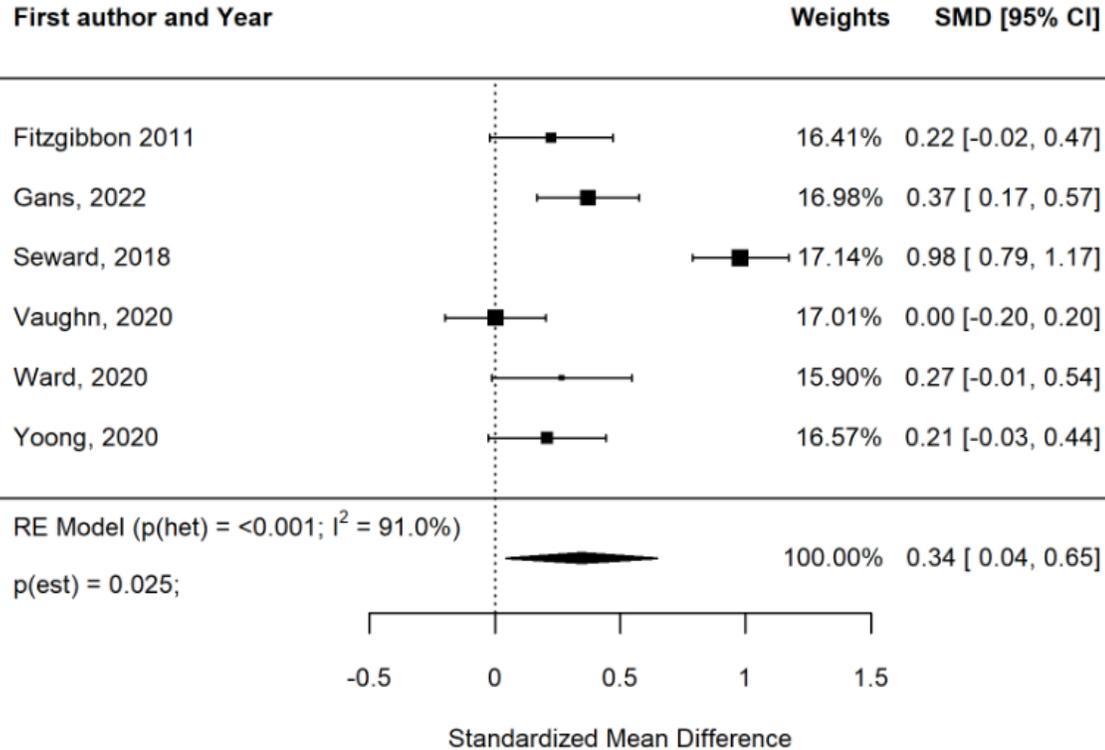


## Vegetables

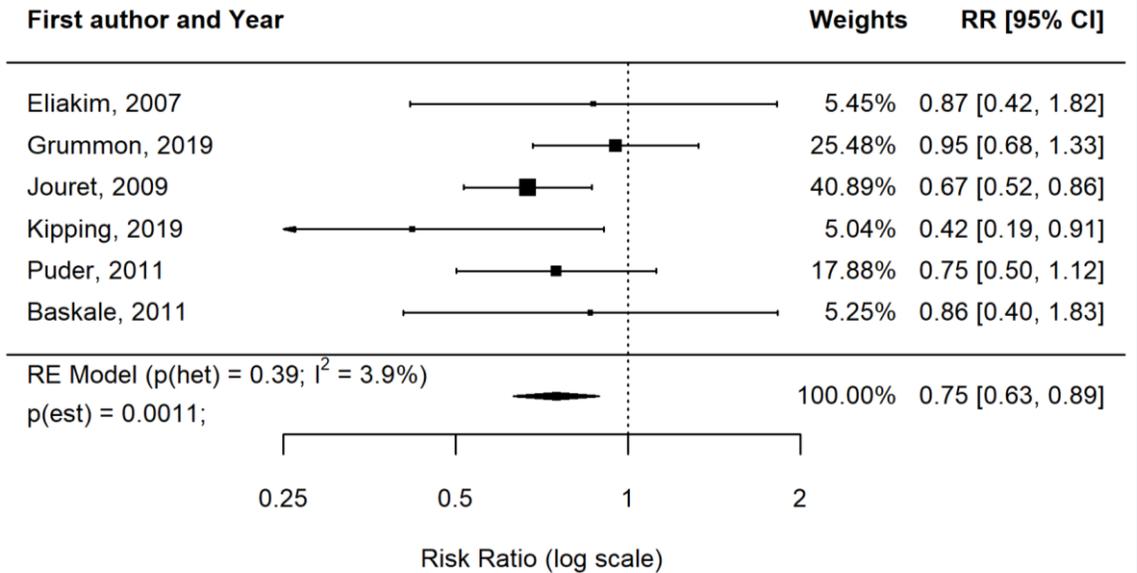


# Draft synthesis: Diet Quality

## Diet Quality



## RR of overweight or obesity



# Characteristics of effective programs

## Physical environment

- Set nutrition standards for the food and beverages available in ECEC

## Sociocultural environment

- Staff training in nutrition curriculum and practices
- Provide opportunities for nutrition education
- Support from healthcare to meet best practices

Note that all interventions were multi-component intervention (including physical activity)



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## 2. Examine the empirical evidence: Physical Activity

### Aim:

To synthesise systematic review evidence of the effectiveness of physical activity interventions in the ECEC setting on child physical activity levels

### Study design:

Review of reviews (as several relevant reviews already exist within the sector)

### Method:

- Review of reviews consistent with Joanna Briggs Institute methods
- 5 databases searched
- Inclusion: Any systematic review describing the impact of controlled ECEC interventions on child physical activity levels (e.g. MVPA, total time in PA etc)

## 2. Examine the empirical evidence: Physical Activity cont.

### Synthesis:

Reported findings of only the highest quality, recent reviews to provide the most contemporary evidence of recommendations

### Search results:

- 10 reviews identified describing 56 unique studies in improving child physical activity
- The effects of 7 strategies to improve child physical activity (MVPA, total time in PA) were assessed via systematic review evidence



# Results: Physical Activity

| Strategy identified                    | Most recent, high quality review | Effect |
|--|----------------------------------|--------|
| Adult-led structured physical activity | Finch, 2016                      | ●      |
| Opportunity for FMS development        | Van Capelle, 2017                | ●      |
| Educator training                      | Peden, 2018                      | ●      |
| Educator practices                     | Hnatuik, 2019                    | ●      |
| Physical activity environment          | Finch, 2016                      | ●      |
| Provision of play equipment            | Broekhuizen, 2014                | ●      |
| Family involvement                     | Hnatuik, 2019                    | ●      |

● Positive effects  
● Inconclusive

### 3. Collate recommendations from guidance and empirical evidence: **Healthy Eating**

-  Inconclusive
-  Positive effects
-  Not examined

| Component  | Sub-component  | Effect  |
|--|--|---|
| Set nutrition standards for the food and beverages available in ECEC | Nutrition standards provide recommended serving sizes for foods, snack, beverages and are aligned with national nutrition guidelines                                     |    |
|  | Provide a variety of healthy foods from the main food groups in age appropriate portion sizes  |    |
|  | Specific standards for ECEC food service menus   |    |
|  | Water should be widely available to children at all times.   |    |
|  | Limit serves and types of sugar sweetened beverages (including fruit juice)  |   |
|  | Keep high energy, low nutrient foods out of ECEC   |  |
| Provide opportunities for nutrition education                        | Offer a variety of food awareness/education activities (i.e., allow children to experiment with different foods and discuss food preferences and family food traditions) |  |

### 3. Collate recommendations from guidance and empirical evidence: Healthy Eating

-  Inconclusive
-  Positive effects
-  Not examined

| Component  | Sub-component  | Effect  |
|--|--|---|
| Staff training in nutrition curriculum and practices             | Educators are trained in implementing health eating practices  |    |
| Educator feeding practices to encourage healthy eating           | Food is not to be used as a reward or punishment   |    |
|  | Encourage children to taste different fruit and vegetables daily   |    |
| Create an environment that encourages and promote healthy eating | Provide healthy options in appropriate services and allow children to self-serve                             |    |
|  | Create a relaxed, enjoyable and social meal time environment.  |    |
|  | Ensure regular and consistent meal and snack patterns  |  |
| Parent engagement  | Encourage parents to pack healthy food from home and ensure foods from home meet nutrition written standards |  |
|  | Encourage family involvement in healthy eating   |  |

### 3. Collate recommendations from guidance and empirical evidence: Physical Activity

-  Inconclusive
-  Positive effects
-  Not examined

| Component   | Sub-component  | Effect  |
|---|--|---|
| Provide opportunities for children to be physically active (more is better)               | Include at least 180 min of physical activity of any intensity, spread throughout the day                |    |
|   | For children 3–4 years, include at least 60 min of moderate-to-vigorous physical activity during the day |    |
|   | Include opportunities for adult-led, structured physical activity  |    |
|   | Include opportunities for unstructured physical activity, free play (play-time)                          |    |
|   | Provide daily opportunities for activity through outdoor playtime (should be supervised)                 |  |
| Offer educator training to provide safe and developmentally appropriate physical activity | Offer staff annual training opportunities in physical activity programs and practices                    |  |

### 3. Collate recommendations from guidance and empirical evidence: Physical Activity

-  Inconclusive
-  Positive effects
-  Not examined

| Component  | Sub-component   | Effect  |
|--|---|---|
| Educators to promote the benefits of physical activity with children<br> | Educators should model physical activity by participating in activities   |    |
|  | Engage children in physical activity they enjoy, including games and sport (age appropriate, fun and offer variety) |    |
| Limit The Time Children Spend Sitting (Less Is Best)   | Children should not be sitting for extended periods (or be restrained) for more than 30–60 min at a time            |    |
| Limit The Use Of Screen Time (Less Is Best)  | No more than 1 h of screen time/week is recommended for children aged 2 or above                                    |    |
| Support Healthy Sleeping Habits  | Include a nap within the daily routine, with regular sleep and wake-up times  |  |
| Create a physical environment that promotes physical activity<br>      | Provide play equipment that encourages physical activity  |  |
|  | Provide adequate space for children to be physically active   |  |

# 4. Assess ECEC implementation and perception of scalability: Healthy Eating & Physical Activity

## Study design:

Cross-sectional study

## Sample:

2,050 services were randomly selected, stratified by state

## Eligibility:

*Inclusion criteria:* Approved, Australian centre-based ECEC service

*Exclusion criteria:*

- FDC services
- Department of Education services
- Services that cater solely for children with disabilities or additional needs



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# 4. Assess ECEC implementation and perception of recommendations: Healthy Eating & Physical Activity

## Methods:

- Online and/or telephone survey
- Services randomly assigned to receive healthy eating or physical activity items

## Measures:

- Service characteristics
- Implementation of healthy eating or physical activity practices (using identified measures)
- Barriers to implementation of programs (not presented)



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# 4. Assess ECEC implementation and perception of recommendations: Healthy Eating & Physical Activity

## Measures:

- Scalability of programs (adapted Intervention Scalability Assessment Tool, ISAT)

### *Domains included:*

- Fidelity and adaptation
- Reach and acceptability
- Delivery setting and workforce
- Implementation infrastructure
- Sustainability

**Role-modelling healthy eating to children** has the potential to reach all children, families, educators and staff within my service.

\* must provide value

- Strongly disagree
- Disagree
- Neither agree nor disagree
- Agree
- Strongly agree

**My service would have the resources, equipment, and funds required for Role-modelling healthy eating to children.**

\* must provide value

- Strongly disagree
- Disagree
- Neither agree nor disagree
- Agree
- Strongly agree

**Once implemented, my service could sustain Role-modelling healthy eating to children in an ongoing manner.**

\* must provide value

- Strongly disagree
- Disagree
- Neither agree nor disagree
- Agree
- Strongly agree



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# Preliminary data: Service characteristics

## Results:

- 2,050 services contacted
- 116 ineligible
- 968 services completed (consent rate = 50.3%)
  - 505 healthy eating
  - 463 physical activity

| Characteristic     | Responding service |
|--------------------|--------------------|
| Long day care      | 90%                |
| Urban              | 73%                |
| High SES           | 59%                |
| ACT                | 2%                 |
| NSW                | 41%                |
| Northern Territory | 1%                 |
| Queensland         | 21%                |
| South Australia    | 4%                 |
| Tasmania           | 2%                 |
| Victoria           | 19%                |
| Western Australia  | 10%                |
| 0-2 years          | 88%                |
| 3-6 years          | 97%                |



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# Preliminary data on ECEC implementation and perception of scalability: Healthy Eating (result pending)

|  |            | ISAT Domain (Ranked)    |                         |                                |                               |                |
|--|------------|-------------------------|-------------------------|--------------------------------|-------------------------------|----------------|
| Practice                                       | Prevalence | Fidelity and adaptation | Reach and acceptability | Delivery setting and workforce | Implementation infrastructure | Sustainability |
| 1. Role-modelling healthy eating               | 75%        | 2                       | 3                       | 3                              | 4                             | 3              |
| 2. Encouraging healthy drink choices           | 61%        | 1                       | 1                       | 2                              | 1                             | 1              |
| 3. Providing families with lunchbox guidelines | 60%        | 4                       | 5                       | 4                              | 6                             | 5              |
| 4. Making healthy menu modifications           | 33%        | 5                       | 6                       | 5                              | 3                             | 4              |
| 5. Providing nutrition education to children   | 28%        | 3                       | 2                       | 1                              | 2                             | 2              |
| 6. Training educators                          | 18%        | 6                       | 4                       | 6                              | 5                             | 6              |

# Preliminary data on ECEC implementation and perception of recommendations: Physical activity (result pending)

|  |            | ISAT Domain (Ranked)    |                         |                                |                               |                |
|--|------------|-------------------------|-------------------------|--------------------------------|-------------------------------|----------------|
| Practice   | Prevalence | Fidelity and adaptation | Reach and acceptability | Delivery setting and workforce | Implementation infrastructure | Sustainability |
| 1. Providing opportunities for child physical activity                 | 84%        | 1                       | 1                       | 1                              | 1                             | 1              |
| 2. Delivering teacher-led, structured physical activity                | 81%        | 5                       | 5                       | 2                              | 6                             | 5              |
| 3. Providing sufficient portable play equipment                        | 33%        | =3                      | 2                       | 4                              | 4                             | 4              |
| 4. Leading energisers with children at least 3 times/day               | 29%        | 2                       | 7                       | 7                              | 3                             | 6              |
| 5. Having a physical activity policy                                   | 16%        | =3                      | 4                       | 3                              | 2                             | 2              |
| 6. Training educators  | 13%        | 6                       | 3                       | 6                              | 5                             | 3              |
| 7. Engaging families in activities to increase child physical activity | 13%        | 7                       | 6                       | 5                              | 7                             | 7              |

# 5. Prioritisation process with policy partners

## Aim:

To pilot a process to illicit a health promotion team’s perspective on the priority ECEC-based practices.

## Methods:

- The identified practices were prioritised based on effectiveness, feasibility and impact as outlined by the Agency for Health Research and Quality

| Evidence   | Impact   | Feasibility   |
|--|--|---|
| Consistent body of evidence that the proposed intervention works | Prevalence and burden of disease (population impact) including both number of persons affected and severity of outcome | Acceptability to implementers and fit with organizational capability                      |
| Good study quality (low risk of bias)                            | Different than current practice (or practice gap)  | Generalizability, adaptability, and ease of achieving fidelity of intervention            |
| Meaningful effect size   | Potential to change health care delivery   | Alignment of Intervention with external policies and incentives (including reimbursement) |
| Good precision   | Potential to reduce disparities or reach new populations   | Presence of evidence supporting implementation<br>Does not duplicate other efforts        |



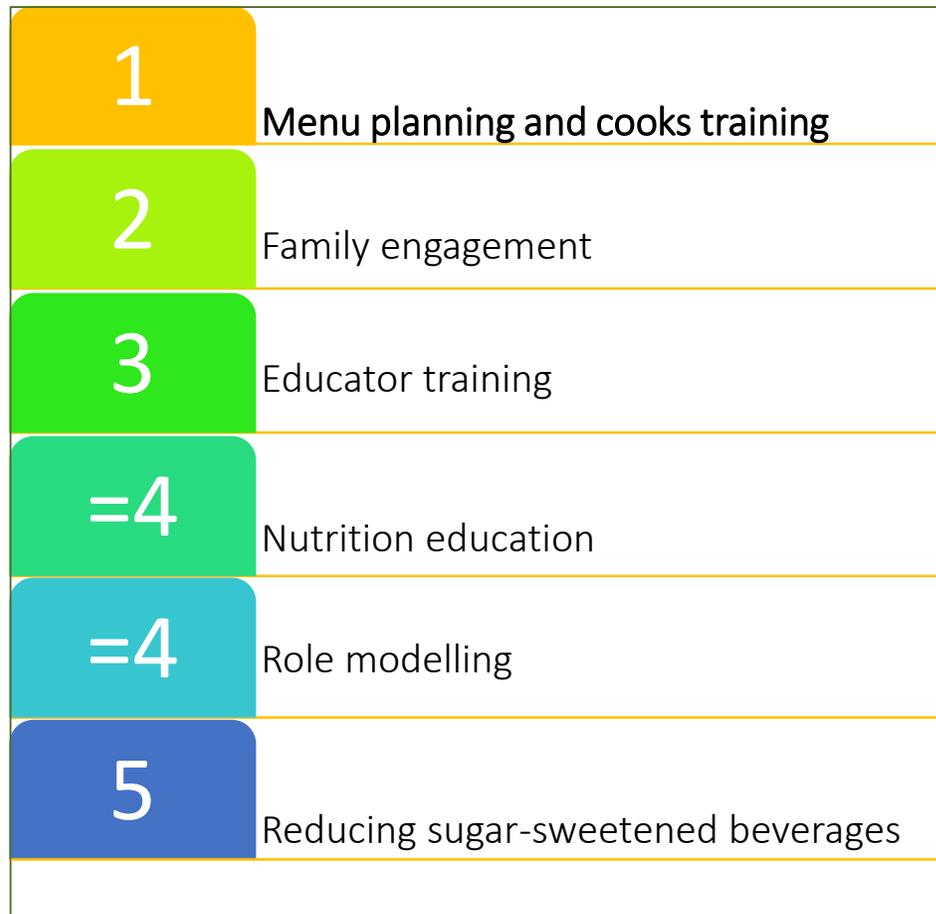
### Optional approaches to making judgments<sup>6</sup>

Explicit criteria: Specific objective criteria are used to assess various attributes, and rules for aggregating them are applied; these are more rigid, reliable, and reproducible  
 Implicit judgments: In complex situations, judgments rely on experts making implicit, subjective judgments about the overall evidence; these judgments are typically not very reliable  
 Structured implicit review: This middle ground creates categories for rating individual components of the overall process. These individual ratings are then aggregated by the reviewer to make an overall judgment. This approach is currently used in many decision settings, including assessing risk of bias and strength of the evidence for systematic reviews

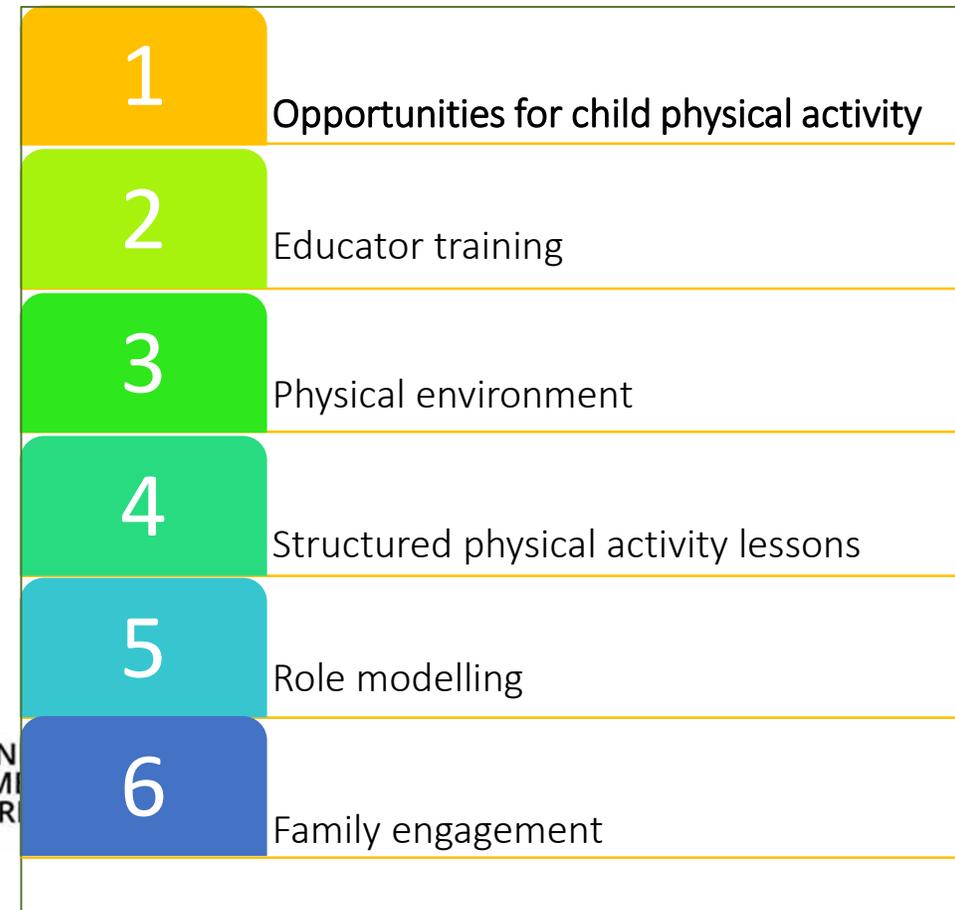
# Outcomes of pilot process

Top 6 healthy eating and physical activity practices presented

## Healthy eating



## Physical activity



# 6. Prioritisation process with policy partners (planned)

## Aim:

To prioritise effective obesity prevention practices, programmes, and policies in the ECEC setting in Australia.

## Methods:

- A Multiple-Criteria Decision Analysis (MCDA) process will be used in combination with a modified e-Delphi.
- Using the ISAT as a framework to guide the prioritisation process

## Sample:

- National sample of relevant stakeholders

# Overall impressions & where to from here?

- Strong empirical evidence to support the delivery of nutrition and physical activity programs in childcare centres on children's health
- Identify priority practices that may warrant implementation support.
- Examine implementation barriers and preferences for implementation support.
- Develop resources to support identification and implementation of high impact practices for each jurisdiction



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# Thank You



Identifying 'priority standards' to improve physical activity and nutrition in centre-based ECEC services

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