Exercise (ECE)

**Brief Introduction**
Exercise (ECE) is a strategy that involves an increase in physical exertion as a means of reducing problem behaviors or increasing appropriate behavior while increasing physical fitness and motor skills. Exercise has proven to be an effective strategy for a variety of outcomes and ages.

**Description**
With ECE, learners engage in a fixed period of programmed physical activity on a regular basis. ECE sessions often begin with warm-up exercises and end with cool-down activities and may include aerobic activities (e.g., jogging, jumping, swimming), strength training, and/or stretching that can take place indoors, outdoors, or at a swimming pool for aquatic exercise programs. ECE is often used in conjunction with prompting, reinforcement, and visual supports.

ECE meets evidence-based criteria with 3 group design and 3 single-case design studies. According to the evidence-based studies, this intervention has been effective for preschoolers (3–5 years) to middle school-age learners (12–14 years) with ASD. ECE can be used effectively to address behavior, school-readiness, academic, and motor skills.

**Brief Adapted from**

### Matrix of ECE by Outcome and Age (years)

<table>
<thead>
<tr>
<th>Social</th>
<th>Communication</th>
<th>Behavior</th>
<th>Joint Attention</th>
<th>Play</th>
<th>Cognitive</th>
<th>School Readiness</th>
<th>Academic</th>
<th>Motor</th>
<th>Adaptive</th>
<th>Vocational</th>
<th>Mental Health</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-5</td>
<td>6-14</td>
<td>15-22</td>
<td>0-5</td>
<td>6-14</td>
<td>15-22</td>
<td>0-5</td>
<td>6-14</td>
<td>15-22</td>
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<td>15-22</td>
</tr>
</tbody>
</table>

### Exercise (ECE) Research Summary

<table>
<thead>
<tr>
<th>Ages</th>
<th>Skills/Intervention Goals</th>
<th>Settings</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>5–17 years</td>
<td>Motor, behavior, social</td>
<td>School, community, clinic</td>
<td>EBP</td>
</tr>
</tbody>
</table>

*The information found in the Research Summary table is updated yearly following a literature review of new research and the age range in this table reflects information from this review.*
Exercise (ECE)

Research


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Steps for Implementation

Step 1. Assessing Activity Level

A. It is important to assess the activity level of children and adolescents with ASD. Quantitative measures for physical activity can include heart rate monitoring, pedometry, electronic screen devices, accelerometry, and inclinometry. Qualitative measures of physical activity include logbooks, survey questionnaires, and diaries. This baseline will allow us to evaluate the efficacy of physical activity.

B. Analyzing typical problem behaviors before the introduction of exercise will also allow us to have a reference to evaluate post intervention.

Step 2. Warming Up

The sessions often begin with a warm-up activity. Warm-up activities can include jumping rope, doing jumping jacks, etc. to ready the learner’s body and nervous system for the workout.

Step 3. Exercising

The major portion of the session can include indoor or outdoor aerobic activities, resistance training, and/or stretching, or aquatic exercises done at a swimming pool. Aerobic training includes cycling, treadmill, exergaming (exercising while playing a video game), and aquatic exercises. Resistance training programs target upper limb and lower limb muscles by using machines, free weights, and body weight. Most studies implement exercise training two to three times per week with durations varying from 20 minutes to an hour.

Step 4. Cooling Down

Following the exercise session, it is ideal to complete a cool-down activity to smoothly transition from exercise back to a steady state of rest. Some examples of cool-down activities are stretching and meditating.

Step 5. Post-Intervention Assessment

Post intervention assessments of physical activity and challenging behaviors are used to evaluate the efficacy of the exercise program. These assessments can be done daily or weekly and may be completed through self-reporting or by parents or teachers/instructors.