Exercise and Lifestyle Programme Improves Weight Maintenance in Young People with Psychosis: A Service Evaluation


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Young people with psychosis typically have higher rates of premature cardiovascular disease and metabolic disorders compared to non-psychotic peers due to unhealthy lifestyle habits and higher rates of obesity.

First episode of psychosis

Alvarez-Jimenez et al. (2008)

54-62% high risk CVD
Age 40 Established Mental Illness

9% high risk CVD within 12m

6% high risk CVD in FEP (treatment naïve)

STOP
Typical weight gain of >7 kg in 3 months and >12 kg in 2 yr

Established psychosis
RCT

Established psychosis
RCT

3 kg

4 kg

20
15

Start HERE NOW!

0 12 24 36 48

Months

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Purpose

To examine the benefits of a 12 wk exercise and lifestyle intervention entitled ‘Supporting Health and Promoting Exercise’ (SHAPE) for young people recently diagnosed with psychosis.

Aims of the service evaluation:
• To assess participant risk of CVD at baseline
• To evaluate anthropometric and key physiological markers immediately post intervention and at 12 months follow up.
Participants:

- Young individuals, FEP (27.5 ± 5.1yr)

Recruitment:

- Community Mental Health Nurse

Programme Elements:

- Physical health assessment
- 12 wk exercise and lifestyle intervention
- Individual weekly goal setting
- SHAPE workbook
- Carers evening
- Collaboration with primary care
  - address physical health risks
  - facilitate specialist referral
SHAPE Intervention

Health educational programme

- healthy eating, nutritional advice
- tobacco, alcohol and substance use
- stress management, mindfulness
- dental and sexual health care

Group exercise session

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Group Exercise Component

Exercise sessions include:

- **gym circuits and resistance training** (gym induction/equipment introduction, individualised programmes)
- **group aerobic exercise** (walking, badminton, basketball)
- **low impact exercise activities** (Tai Chi, Pilates)

Exercise prescription:

- exercise 2-4 d.wk\(^{-1}\) for a duration of 20-30’ – working up to > 4 d.wk\(^{-1}\)
- moderate intensity and engaging in a wide range of exercises
- total exercise duration ~45-60’ (incl. warm-up and cool-down)

(ACSM 2014; Biddle et al., 2000)
Monitoring and Evaluation

Study design: Within-group repeated measures
Evaluation: Baseline, 12 wk and 12 months post-intervention
Delivery: 5 cohorts over 1 year period

Procedures

• **Engagement** (enrolment, utilisation, adherence) and dropout rates

• **Key physical health risk markers**: BMI, waist circumference, resting blood pressure, blood glucose, total serum cholesterol, prolactin

• **Self-reported lifestyle behaviours**: PA levels, diet, and tobacco, alcohol and substance use
RESULTS: Engagement

113 invited, 56 attended wk 1, 26 completed programme

- 59% DNA due to low motivation, poor mental health, distance to travel
- 41% attendees dropped out (typically before week 5)

Typical attendance pattern for individual cohorts
RESULTS: Baseline Assessment (n=56)

Young people with psychosis are already at increased physical health risk:

- Elevated levels above normal cut offs in resting heart rate, blood pressure, blood lipids, BMI and waist circumference
- 54% (n=30) overweight (BMI>25) or obese (BMI>30): of which 7% extremely obese (BMI>35)
- Over 50% smoke daily and ate <5 fruits and vegetables per day
- 43% prescribed most obesogenic antipsychotic medications (Clozapine and Olanzapine)
Results: 12 week outcomes (n=26)

Mean weight, BMI and waist circumference for group held constant (typically would expect these to increase without intervention)

- 12 maintained baseline weight (± 1kg)
- 7 decreased weight (2-7 kg)
- 7 increased weight (2-9 kg)
- Only 1/7 exceeded weight gain guidelines of <7 kg in 12 wk

Results compare favourably with only published study of a similar intervention programme in Australia (Curtis et al., 2015)
SHAPE 12 week Outcome Data

<table>
<thead>
<tr>
<th></th>
<th>UK SHAPE (n=26)</th>
<th>Bondi KBIM (n=16)</th>
<th>New South Wales Standard Care (n=12)</th>
<th>Paired T-test for SHAPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight (kg)</td>
<td>0.7 (-1.0 to 2.3)</td>
<td>1.8 (-0.4 to 2.8)</td>
<td>7.8 (4.8 to 10.7)*</td>
<td>t = 0.811 p = 0.43</td>
</tr>
<tr>
<td>BMI (kg/m2)</td>
<td>0.3 (-0.3 to 0.8)</td>
<td>0.4 (-0.1 to 0.9)</td>
<td>2.6 (1.6 to 3.6)*</td>
<td>t = 0.967 p = 0.34</td>
</tr>
<tr>
<td>Waist circumference (cm)</td>
<td>1.1 (-1.8 to 3.9)</td>
<td>0.1 (-2.1 to 2.2)</td>
<td>7.1 (4.8 to 9.4)*</td>
<td>t = 0.757 p = 0.43</td>
</tr>
</tbody>
</table>

Note: Data presented as mean within-group change (95% CI); *, p < 0.05. Results compared with Bondi ‘Keeping Body in Mind’ (KBIM) Programme (Curtis et al. 2015, EIP)
SHAPE 12 month Outcome Data

<table>
<thead>
<tr>
<th>Variable</th>
<th>Baseline (n=26)</th>
<th>12 weeks (n=26)</th>
<th>Baseline to 12 wk post* (n = 26)</th>
<th>12 months (n=16)</th>
<th>Baseline to 12 months post* (n=16)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body mass (kg)</td>
<td>94.4 (23.1)</td>
<td>95.1 (23.4)</td>
<td>t = 0.811</td>
<td>p = 0.43</td>
<td>94.8 (27.9)</td>
</tr>
<tr>
<td>BMI (kg.m²)</td>
<td>30.7 (7.2)</td>
<td>31.0 (7.4)</td>
<td>t = 0.967</td>
<td>p = 0.34</td>
<td>31.5 (9.0)</td>
</tr>
<tr>
<td>Waist circumference (cm)</td>
<td>98.1 (17.0)</td>
<td>99.2 (16.8)</td>
<td>t = 0.757</td>
<td>p = 0.43</td>
<td>97.1 (22.1)</td>
</tr>
</tbody>
</table>

*, analysed using Paired Sample T-test.
## Comparison of cardiometabolic markers

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>Baseline</th>
<th>12 months</th>
<th>Mean Change</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body mass index</td>
<td>16</td>
<td>31.4 (8.5)</td>
<td>31.5 (9.0)</td>
<td>0.09 (2.5)</td>
<td>0.89</td>
</tr>
<tr>
<td>Waist circumference (cm)</td>
<td></td>
<td>♂ 7 100.2 (23.3)</td>
<td>♀ 7 90.7 (13.3)</td>
<td>3.3 (8.0)</td>
<td>0.32</td>
</tr>
<tr>
<td>Systolic blood pressure (mm Hg)</td>
<td>15</td>
<td>122.4 (17.0)</td>
<td>125.2 (17.0)</td>
<td>2.8 (15.3)</td>
<td>0.49</td>
</tr>
<tr>
<td>Diastolic blood pressure (mm Hg)</td>
<td>15</td>
<td>78.9 (9.2)</td>
<td>79.4 (9.4)</td>
<td>0.5 (9.5)</td>
<td>0.85</td>
</tr>
<tr>
<td>Resting heart rate (beats.min⁻¹)</td>
<td>13</td>
<td>84.7 (21.4)</td>
<td>85.5 (21.3)</td>
<td>0.8 (18.4)</td>
<td>0.88</td>
</tr>
<tr>
<td>Total cholesterol (mmol.L⁻¹)</td>
<td>9</td>
<td>4.4 (1.0)</td>
<td>4.3 (1.0)</td>
<td>-0.2 (0.7)</td>
<td>0.48</td>
</tr>
<tr>
<td>Triglycerides (mmol.L⁻¹)</td>
<td>4</td>
<td>2.3 (1.9)</td>
<td>2.0 (2.0)</td>
<td>-0.4 (1.5)</td>
<td>0.64</td>
</tr>
<tr>
<td>HbA1C (mmol.mol)</td>
<td>7</td>
<td>31.8 (13.3)</td>
<td>37.7 (9.7)</td>
<td>5.9 (11.4)</td>
<td>0.22</td>
</tr>
<tr>
<td>Prolactin (mIU/L⁻¹)</td>
<td>6</td>
<td>852.0 (707.3)</td>
<td>371.3 (239.1)</td>
<td>-480.7 (595.3)</td>
<td>0.11</td>
</tr>
</tbody>
</table>
SHAPE 12 Month Outcomes (n=16)

Mean weight, BMI, waist circumference and other risk indicators held constant (typically would expect these to increase without intervention)

• 2 increased weight > 5 kg

Positive impact on healthy lifestyle behaviours:

• 7 reported eating healthier (eating 5 fruits and vegetables per day)
• 2 ceased substance use
• 2 ceased alcohol use
• 4 ceased smoking
• 5 were less sedentary (>90 minutes per week)
“...I quite liked how it **structured my day**, because before, I would not do anything, so you feel like you’ve accomplished after coming and that’s **good for my self-esteem**”.

"... it was always quite informal and … a relaxed laid back atmosphere when we were doing everything, nothing was said in dictator kind of a way **it was an open discussion on options we have over our lifestyle** rather than like “you’re not eating this or you’re not eating that or get out and do that!” it was more of **make your own decisions based on our recommendations**…which was good.

“...because of the nutrition side of things, I’m **trying to concentrate more on healthy eating.**”

“...once I’ve done the exercise, I **feel loads better**, like a weight has been lifted, it enables me to carry on for the day, for the rest of the week. **It really motivates me**, just by the fact that it lifts me.”
Lessons Learnt

• Young people with psychosis can reduce/delay their physical health risk following a 12 wk exercise and lifestyle intervention and benefits appear to be sustained at 12 months follow up.

• Profiling physical health needs of EIP clients has markedly improved EIP service physical health assessment, monitoring and follow up processes

• Service user involvement in programme design and feedback provided an iterative service improvement loop and enhanced programme evaluation