Richard B. Kreider, PhD
Baylor University

Curves Women’s Health & Fitness Initiative

Identify ways to optimize the health and well-being of women through various diet, exercise, and/or nutritional interventions.
Curves Women’s Health & Fitness Initiative

- Completed Studies
  - Curves I
  - Curves II
  - Curves Extension (ongoing)
  - Curves Biomechanics
  - Curves Exercise Intensity
  - Curves Metabolism
  - Curves Calcium
  - Curves Osteoarthritis
  - Curves Seniors
  - C-Fit for Kids

Research Update

- Curves Combined
- Curves Extension
- Curves Special Populations
  - Seniors
  - Metabolic Syndrome
  - Medically-Managed
  - C-Kids II (High Risk)
- Curves Smart
- Ongoing/Planned Studies
Curves Study Design

14 Weeks of Curves Training

Testing Intervals

<table>
<thead>
<tr>
<th>Phase</th>
<th>Calories/d</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-2 Wk</td>
<td>1,200 kcal/d</td>
</tr>
<tr>
<td>8-9 Wk</td>
<td>1,600 kcal/d</td>
</tr>
<tr>
<td>4 Wk</td>
<td>2,600 kcal/d</td>
</tr>
</tbody>
</table>

- Control, EX Only, HCHO, MHP, VHP, HCD Diets
- Intermittent 2d @ 1,200 kcal/d

Curves I
- Dietary Records (4-d)
- Psychometric Tests
- Body Composition/Bone Density (DEXA)
- Total Body Water (BIA)
- Hip & waist measurement
- Resting HR & BP
- Fasting Blood Samples (12h)
- Resting Energy Expenditure (REE)

Curves II
- At 0, 2, 10, 10.4, & 14 Wks:
  - Maximal Stress Test
  - 1RM Bench Press
  - 80% of 1RM on Bench Press
  - 1RM Leg Press
  - 80% of 1RM on Leg Press
  - Side effects were monitored by an RN on a weekly basis

n = 467

Curves Calcium

Curves OA

n = 467 p = 0.001

More evidence that VHP diet promotes greater weight loss!

FASEB J. 2007 21:1b 225
70 – 85% of weight loss is fat!

VHP diet promotes most fat loss!

FASEB J. 2007 21:lb 225
### Curves Combined (n = 467)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Impact of Curves</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body Fat</td>
<td>↓ (1.5 – 2%)</td>
</tr>
<tr>
<td>Waist &amp; Hip</td>
<td>↓ (1 - 4%)</td>
</tr>
<tr>
<td>Resting HR</td>
<td>↓ (2.6%)</td>
</tr>
<tr>
<td>Resting SBP</td>
<td>↓ (3.0%)</td>
</tr>
<tr>
<td>Resting DBP</td>
<td>↓ (3.5%)</td>
</tr>
<tr>
<td>1 RM Bench Press</td>
<td>↑ (5.1%)</td>
</tr>
<tr>
<td>1 RM Leg Press</td>
<td>↑ (13%)</td>
</tr>
<tr>
<td>BP Endurance</td>
<td>↑ (21%)</td>
</tr>
<tr>
<td>LP Endurance</td>
<td>↑ (36%)</td>
</tr>
</tbody>
</table>

Statistically significant time effects (p<0.05).

**FASEB J. 2007 21:1b 227 & 229**

### Curves Combined

<table>
<thead>
<tr>
<th>Variable</th>
<th>Impact of Curves</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximal Aerobic Capacity</td>
<td>↑ (8%)</td>
</tr>
<tr>
<td>(n=467)</td>
<td></td>
</tr>
<tr>
<td>Total Cholesterol</td>
<td>↓ (3-6%)</td>
</tr>
<tr>
<td>(n=335)</td>
<td></td>
</tr>
<tr>
<td>Triglycerides</td>
<td>↓ (2-7%)</td>
</tr>
<tr>
<td>(n=335)</td>
<td></td>
</tr>
<tr>
<td>Glucose</td>
<td>↓ (1-3%)</td>
</tr>
<tr>
<td>(n=335)</td>
<td></td>
</tr>
<tr>
<td>Leptin</td>
<td>↓ (17-21%)</td>
</tr>
<tr>
<td>(n=216)</td>
<td></td>
</tr>
<tr>
<td>Fasting Insulin</td>
<td>↓ (2-13%)</td>
</tr>
<tr>
<td>(n=216)</td>
<td></td>
</tr>
<tr>
<td>Insulin Sensitivity</td>
<td>↑ (9-23%)</td>
</tr>
<tr>
<td>(n=216)</td>
<td></td>
</tr>
</tbody>
</table>

Statistically significant time effects (p<0.05).

**FASEB J. 2007 21:1b 227, 229, 230**
### Curves Combined (n = 287)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Impact of Curves</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Functioning</td>
<td>↑ (24-29%)</td>
</tr>
<tr>
<td>Social Functioning</td>
<td>↑ (11%)</td>
</tr>
<tr>
<td>Vitality</td>
<td>↑ (23-26%)</td>
</tr>
<tr>
<td>Mental Health</td>
<td>↑ (7-8%)</td>
</tr>
<tr>
<td>Appearance Evaluation</td>
<td>↑ (19%)</td>
</tr>
<tr>
<td>Body Area Satisfaction</td>
<td>↑ (14-15%)</td>
</tr>
<tr>
<td>Overweight Preoccupation</td>
<td>↑ (16-18%)</td>
</tr>
<tr>
<td>Self-Classified Weight</td>
<td>↓ (3-7%)</td>
</tr>
</tbody>
</table>

- Statistically significant time effects (p<0.05).


### Curves Combined

- Developing a very large data base
- Curves promotes weight loss and improves fitness and a wide variety of women (18-65)
- Weight loss achieved without loss of FFM or reduction in REE
- VHP diet most effective in promoting fat loss
Curves Long-Term Study

- **Rationale**
  - Most people lose weight on various diets but regain the weight within a year

- **Methods**
  - All subjects completing Curves 14 wk studies are invited to participate in one-year extension
  - Subjects asked to exercise 3 times a week and diet (2 days @ 1,200 kcals/day) only if they gain 3 lbs
  - Testing @ 3, 6, 9, and 12 months

Long-Term Results

**Fat Mass**

<table>
<thead>
<tr>
<th>Time</th>
<th>0 W</th>
<th>10 W</th>
<th>14 W</th>
<th>3 M</th>
<th>6 M</th>
<th>9 M</th>
<th>12 M</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change (kg)</td>
<td>0</td>
<td>-2</td>
<td>-4</td>
<td>-6</td>
<td>-8</td>
<td>-10</td>
<td>-12</td>
</tr>
</tbody>
</table>

**Body Mass**

<table>
<thead>
<tr>
<th>Time</th>
<th>0 W</th>
<th>10 W</th>
<th>14 W</th>
<th>3 M</th>
<th>6 M</th>
<th>9 M</th>
<th>12 M</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change (kg)</td>
<td>0</td>
<td>-2</td>
<td>-4</td>
<td>-6</td>
<td>-8</td>
<td>-10</td>
<td>-12</td>
</tr>
</tbody>
</table>

*n = 79*

**Maintained majority of weight loss after 1 year!**
Long-Term Results

Curves Extension

Summary

- Women can maintain weight loss, fitness, and health gains by consistently training and intermittent dieting
- Weight loss continues for about 6 months and then begins to increase
- Additional 4-8 wk diet every 3-6 months may promote further weight loss and additional health gains
What’s New?

Curves for Seniors

Rationale

- Lose muscle and gain fat as one ages (sarcopenia)
- Loss of muscle mass and strength increases risk to falls and fractures
- Resistance-exercise increases strength and muscle mass in elderly
- High protein diets spare loss of muscle mass during weight loss
- Hypothesized that elderly may benefit from following a high protein diet combined with resistance-training
Curves for Seniors

- 53 Women:
  - 65.7±5 yrs (60 – 75)
  - 63.4±2 in
  - 43.5±4 % BF
  - 30.4±4 kg•m² BMI
- Randomized into:
  - Exercise Only
  - Exercise + High CHO Diet (55% C, 30% F, 15% P)
  - Exercise + High Protein Diet (PI – 7% C, 30% F, 63% P), (PII – 15% C, 30% F, 55% P)

Curves for Seniors

14 Weeks of Curves Training

Testing Intervals

- 1 Wk: 1,200 kcal/d
- 9 Wk: 1,600 kcal/d
- 4 Wk: 2,100 kcal/d

Exercise Only, HCHO or HP Diets

- At 0, 10, & 14 W:
  - Dietary Records (4-d)
  - Psychometric Tests
  - Body Composition/Bone Density (DEXA)
  - Total Body Water (BIA)
  - Hip & waist measurement
  - Resting HR & BP
  - Fasting Blood Samples (12h)
  - Resting Energy Expenditure (REE)
  - 6 Minute Walk Test
  - Equitest Balance / Functional Testing

n=53

Side effects were monitored by an RN on a weekly basis.
Curves for Seniors

Body Mass

- HP group lost more weight!

Fat Mass

- HP group lost more fat!
Curves for Seniors

Weight Loss with loss of FFM!

HP group lost more body fat!
Curves for Seniors

Curves for Seniors (n = 53)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Impact of Curves</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waist &amp; Hip</td>
<td>↓ (2 cm)</td>
</tr>
<tr>
<td>Resting HR</td>
<td>↓ (2-3%)</td>
</tr>
<tr>
<td>Resting SBP</td>
<td>↓ (4 mmHg @ 10 wk)</td>
</tr>
<tr>
<td>Resting DBP</td>
<td>↓ (5 mmHg @ 10 wk)</td>
</tr>
<tr>
<td>1 RM Bench Press</td>
<td>↑ (21%)</td>
</tr>
<tr>
<td>1 RM Leg Press</td>
<td>↑ (32%)</td>
</tr>
<tr>
<td>BP Endurance</td>
<td>↑ (29%)</td>
</tr>
<tr>
<td>LP Endurance</td>
<td>↑ (23%)</td>
</tr>
<tr>
<td>Maximal Oxygen Uptake</td>
<td>↑ (12%)</td>
</tr>
<tr>
<td>6 Minute Walk-Test</td>
<td>↑ (6%)</td>
</tr>
</tbody>
</table>

Statistically significant time effects (p<0.05).
Curves for Seniors

Preliminary Findings

- Curves is an effective program for women age 60 – 75 yrs
- Weight loss achieved without loss of FFM
- HP diet is more effective in promoting fat loss
- Gains in strength, muscular endurance, and aerobic capacity were impressive

Curves & Metabolic Syndrome
**Characteristics of the Metabolic Syndrome: NCEP-ATP III**

- Abdominal obesity
- Glucose intolerance/Insulin resistance
- Hypertension
- Atherogenic dyslipidemia
- Proinflammatory/Prothrombotic state

---

**Clinical Identification of the Metabolic Syndrome**: NCEP-ATP III

*Diagnosis is established when >3 of these risk factors are present*

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>Defining Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abdominal obesity</td>
<td></td>
</tr>
<tr>
<td>(Waist circumference)</td>
<td></td>
</tr>
<tr>
<td>Men</td>
<td>&gt;102 cm (&gt;40 in)</td>
</tr>
<tr>
<td>Women</td>
<td>&gt;88 cm (&gt;35 in)</td>
</tr>
<tr>
<td>TG</td>
<td>&gt;150 mg/dL</td>
</tr>
<tr>
<td>HDL-C</td>
<td></td>
</tr>
<tr>
<td>Men</td>
<td>&lt;40 mg/dL</td>
</tr>
<tr>
<td>Women</td>
<td>&lt;50 mg/dL</td>
</tr>
<tr>
<td>Blood pressure</td>
<td>&gt;130 / &gt;85 mm Hg</td>
</tr>
<tr>
<td>Fasting glucose</td>
<td>&gt;110 (&gt;100**) mg/dL</td>
</tr>
</tbody>
</table>

**2003 New ADA IFG criteria (Diabetes Care)**

**Increasing Prevalence of NCEP Metabolic Syndrome with Age (NHANES III)**


**Metabolic Syndrome: Impact on Mortality**

*P < 0.001.

Curves Metabolic Syndrome

- 355 sedentary women
  - 46±11 yrs
  - 163±7 cm
  - 92±16 kg
  - 45±4% body fat
- Assigned to:
  - Control group (C)
  - Exercise group (E)
  - HCD group
  - HC diet
  - HP diet
- Participants followed the Curves diet and fitness program 3 days/wk.
- Participants were retrospectively divided into those with less than (n=196) or more than (n=159) 3 criteria for MS.

**Metabolic Syndrome Analysis**

<table>
<thead>
<tr>
<th></th>
<th>Fat Mass</th>
<th>Systolic Blood Pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>n = 355, p=0.046</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>n = 355, p=0.01</td>
<td>1</td>
<td>5</td>
</tr>
</tbody>
</table>

FASEB J. 2007 21:lb 235
Curves Metabolic Syndrome

- 166 sedentary women (48±10 yrs, 163±7 cm; 96±17 kg; 46±4% body fat) with MS were assigned to:
  - Exercise group (E)
  - High carbohydrate Diet (HC)
  - High protein Diet (HP)
- Diets were 1,200 kcal/d for 1-2 wks and 1,600 kcal/d for 8-9 wks followed by a maintenance period (2,600 kcals/d).
- Subjects participated in the Curves fitness program 3-days/wk.

Metabolic Syndrome Analysis

- Fat Mass
  - n = 166, p=0.001
- Waist Circumference
  - n = 166, p=0.02

FASEB J. 2007 21:lb 236
Metabolic Syndrome Analysis

- Cholesterol
  - n = 166, p=0.07
  - Triglycerides
  - n = 166, p=0.01

Curves Metabolic Syndrome

- Curves program can help women with MS improve health status
- Subjects with MS may experience greater benefits from following a HP diet with exercise
Curves for Medical Special Populations

Rationale

• Many individuals have medically managed conditions in which exercise and weight loss may provide therapeutic benefit
• The purpose of this study was to determine the effects of the Curves fitness and weight loss program in individuals with various controlled medical conditions

Curves for Medical Special Populations

• Women with medically diagnosed / treated conditions were recruited
• Cohort (n=113) consisted of:
  – Obesity (83%)
  – Diabetes Mellitus (17%)
  – Hypertension (46%)
  – Hyperlipidemia (31%)
  – Thyroid Conditions (26%)
  – Other (19%)
  – Many had more than one condition
Curves for Medical Special Populations

14 Weeks of Curves Training

Testing Intervals

- 1 Wk 1,200 kcal/d
- 9 Wk 1,600 kcal/d
- 4 Wk 2,600 kcal/d
- Intermittent 2d @ 1,200 kcal/d

Control, EX Only, HCHO, MHP, VHP, or HCD Diets

(n=113)

50±10 yrs
95.3±21 kg
64±3 in
46.1±5 % BF
35.9±7 kg/m² BMI

• At 0, 2, 10, 10.4, & 14 W:
  - Dietary Records (4-d)
  - Psychometric Tests
  - Body Composition/Bone Density (DEXA)
  - Total Body Water (BiA)
  - Hip & waist measurement
  - Resting HR & BP
  - Fasting Blood Samples (12h)
  - Resting Energy Expenditure (REE)

• At 0, 10, & 14 wks:
  - Maximal Stress Test
  - 1RM Bench Press
  - 80% of 1RM on Bench Press
  - 1RM Leg Press
  - 80% of 1RM on Leg Press

Side effects were monitored by an RN on a weekly basis

Curves for Medical Special Populations

Preliminary Analysis

n = 109

Body Mass

T = 0.001
I = 0.08

Weight loss tended to be greater in diet groups
Fat loss in all groups!

Curves for Medical Special Populations
Preliminary Analysis

Fat Mass

\[ n = 109 \]
\[ T = 0.001 \]
\[ I = 0.18 \]

Resting Energy Expenditure

\[ n = 98, T = 0.008; I = 0.67 \]

\[ n = 98, T = 0.45; I = 0.60 \]
### Curves for Medical Special Populations

*Preliminary Analysis*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Impact of Curves</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resting HR</td>
<td>↓ (3-4%)</td>
</tr>
<tr>
<td>Resting SBP &amp; DBP</td>
<td>↓ (2-6 mmHg)</td>
</tr>
<tr>
<td>1 RM Bench Press</td>
<td>↑ (12%)</td>
</tr>
<tr>
<td>1 RM Leg Press</td>
<td>↑ (12%)</td>
</tr>
<tr>
<td>BP Endurance</td>
<td>↑ (14%)</td>
</tr>
<tr>
<td>LP Endurance</td>
<td>↑ (17%)</td>
</tr>
<tr>
<td>Maximal Aerobic Capacity</td>
<td>↑ (6%)</td>
</tr>
<tr>
<td>Total Cholesterol</td>
<td>↓ (5-10%)</td>
</tr>
<tr>
<td>Triglycerides</td>
<td>↓ (6-9%)</td>
</tr>
<tr>
<td>Glucose</td>
<td>↓ (4-7%)</td>
</tr>
</tbody>
</table>

Mean effects over time

### Curves for Medical Special Populations

*Preliminary Findings*

- Curves appears to be safe and effective for women with medically managed conditions
- Preliminary results show weight loss as well as improved markers of health and fitness
Curves C-Fit

- Curves C-Fit Study examined effects of incorporating Curves as part of PE in 3 middle schools (n=510)
- Program found program improvements in fitness, however, a high percentage of students were identified as “at risk”

<table>
<thead>
<tr>
<th>4th</th>
<th>8th</th>
<th>11th</th>
</tr>
</thead>
<tbody>
<tr>
<td>22</td>
<td>26</td>
<td>16</td>
</tr>
<tr>
<td>23</td>
<td>19</td>
<td>16</td>
</tr>
<tr>
<td>20</td>
<td>14</td>
<td>16</td>
</tr>
<tr>
<td>0</td>
<td>20</td>
<td>20</td>
</tr>
</tbody>
</table>

95th Percentile BMI

C-Fit II for At Risk Kids

10 Weeks of Curves Training  
Summer

Testing Intervals

10 Wk  
1,000, 1200, 1400, or 1600 kcal/d based on REE  
3 month Follow-Up

Standard PE only / No Diet (n = 25)  
Exercise, Diet, and Behavioral Modification (n = 25)

- At 0 and 10 weeks
  - Food Records (4-d)
  - Height/weight
  - Resting Energy Expenditure (REE)
  - Body Composition/Bone Density (DEXA)
  - Total Body Water (BIA)
  - Hip & waist measurement
  - Resting HR & BP
  - Fasting Blood Samples (12h)

- At 3 months
  - Dietary Records (4-d)
  - Psychometric Tests
  - Height/weight

- Grip Strength
- Flexibility
- Push-up Endurance
- Curl-Up Endurance
- Walk/run test
- Pedometers
- Psychometric Tests
- Exit Interview
C-Fit II for At-Risk Kids

### Intervention

<table>
<thead>
<tr>
<th>Day</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday</td>
<td>Curves</td>
</tr>
<tr>
<td>Tuesday</td>
<td>Curves</td>
</tr>
<tr>
<td>Wednesday</td>
<td>Aerobic Activity</td>
</tr>
<tr>
<td>Thursday</td>
<td>Curves</td>
</tr>
<tr>
<td>Friday</td>
<td>Weight Check; Education; Diet Assistance</td>
</tr>
</tbody>
</table>

Control Group – PE only (M-F)

C-Fit II for At-Risk Kids

- 43 Girls (6 – 8th Grade)
  - 12.7±1 yrs (11-15)
  - 61.7±3in
  - 41.6±5 % BF
  - 30.3±6 kg·m² BMI
- Randomized into:
  - Control Group
    - Regular PE
    - No Diet Intervention
  - Intervention Group
    - Curves Fitness
    - Diet (500 kcals below REE with 55% C, 15% P, 30% F)
    - Nutrition & Fitness Education
    - Behavioral Modification Techniques
C-Fit II for At-Risk Kids

Fat Mass

Body Fat

Fasting Glucose

Fasting Insulin

n = 43, p=0.014

n = 43, p=0.04

n = 43, p=0.22

n = 43, p=0.09
C-Fit II for At-Risk Kids

**Glucose to Insulin Ratio**
- Weeks: PE, Cones
- n = 43, p=0.21

**Homeostatic Insulin Resistance**
- Weeks: PE, Cones
- n = 43, p=0.09

**Total Cholesterol**
- Weeks: PE, Cones
- n = 43, p=0.21

**Triglycerides**
- Weeks: PE, Cones
- n = 43, p=0.01
C-Fit II for At-Risk Kids

• Implementation of the Curves fitness, weight loss, and behavioral support techniques during PE classes promotes greater weight loss and improvements in markers of health than standard PE in at risk kids.

CurvesSmart

• Rationale
  – The Curves Smart equipment provides feedback regarding maintenance of proper intensity during each repetition as well as provides a computerized progression as training adaptations occur.
  – Theoretically, this should lead to greater training adaptations over time.
CurvesSmart I

- 7 experience Curves trained women (min 6 wks)
- Familiarized to CurvesSmart
- Performed 1 RM testing
- On a separate day, subjects performed the CurvesSmart circuit with no visual feedback
- 3 days later, subjects repeated the CurvesSmart circuit with visual feedback
- Data collected on work output with and without feedback

CurvesSmart I

- Work output was 21% greater with CurvesSmart
- Less variation among subjects

Caloric Expenditure

N=7; p = 0.04
CurvesSmart II

- 86 sedentary women (as of 9/25/07)
  - 38.4±8 yrs
  - 163±8 cm
  - 93±20 kg
  - 43.6±5% body fat

- Training Groups:
  - Exercise with Feedback
  - Exercise without Feedback

- Diet Groups:
  - HC diet
  - HP diet

- Participants followed the Curves weight loss and fitness program (3 days/wk).

CurvesSmart II

14 Weeks of Curves Training

Testing Intervals

1 Wk 1,200 kcal/d

9 Wk 1,600 kcal/d

4 Wk 2,600 kcal/d
Intermittent 2d @ 1,200 kcal/d

HCHO or HP Diets

n=86

- At 0, 5, 10, & 14 W:
  - Dietary Records (4-d)
  - Psychometric Tests
  - Body Composition/Bone Density (DEXA)
  - Total Body Water (BIA)
  - Hip & waist measurement
  - Resting HR & BP
  - Fasting Blood Samples (12h)
  - Resting Energy Expenditure (REE)

- Maximal Stress Test
- 1RM Bench Press
- 80% of 1RM on Bench Press
- 1RM Leg Press
- 80% of 1RM on Leg Press

- Side effects were monitored by an RN on a weekly basis
CurvesSmart II
Preliminary Findings

**Body Mass**

- Change (kg)

Weeks: 0 5 10 14

FB: ▢ ▢ ▢ ▢
No FB: □ □ □ □

n = 18, NS

**Fat Mass**

- Change (kg)

Weeks: 0 5 10 14

FB: ▢ ▢ ▢ ▢
No FB: □ □ □ □

n = 17, NS

**Fat Free Mass**

- Change (kg)

Weeks: 0 5 10 14

FB: ▢ ▢ ▢ ▢
No FB: □ □ □ □

n = 17, NS

**Body Fat**

- Change (%)

Weeks: 0 5 10 14

FB: ▢ ▢ ▢ ▢
No FB: □ □ □ □

n = 17, NS
CurvesSmart II
Preliminary Findings

1 RM Bench Press

Weeks 0 5 10 14
Change (%) FB No FB

1 RM Leg Press

Weeks 0 5 10 14
Change (%) FB No FB

Curves I & II Combined (n=287)
n = 18, p=0.25
n = 18, NS

CurvesSmart – 7 Clubs

• Average energy expenditure from first 10 workouts from 1,031 clients at 7 different clubs:

310±91 kcal

n = 1,031; 49.3±14 yrs; 174±40 lbs; 64.3±3 in
CurvesSmart – 7 Clubs

- CurvesSmart allows us to monitor results by:
  - Member
  - Club
  - Region
  - State
  - Nation

- Will provide platform for the largest health and fitness outcome data base in the world!

n = 1,031; 49.3±14 yrs; 174±40 lbs; 64.3±3 in

CurvesSmart

Preliminary Findings

- Work output is ~21% greater with visual feedback
- Some preliminary evidence of better fat loss and more impressive gains in strength
- No “upper end” to workout
- Personalized feedback, results, monitoring very well-received
- Provides platform to monitor health and fitness outcomes of women participating in Curves program world-wide
Ongoing & Planned Studies

- CurvesSmart (In progress)
- Curves “Fit” (In progress)
- Curves/General Mills (In progress)
- Curves “New Diet” with Calcium (In progress)
- Curves Web-Based Study (In progress)
- Curves Genetics (planned)