Physical activity and breast cancer: mechanisms and interventions?

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PA and Prevention: Epidemiology

- 25% risk reduction with highest vs. lowest levels of physical activity
- Greatest reduction with recreational physical activity

Friedenreich CM. Recent Results in Cancer Research 2011; 188:125-39
<table>
<thead>
<tr>
<th>Study</th>
<th>Location</th>
<th>N</th>
<th>Physical Activity</th>
<th>Sex hormones</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Activity and Total Health</td>
<td>USA</td>
<td>173</td>
<td>Aerobic Supervised &amp; Home-based 225 min/wk</td>
<td>-4.4% estradiol -1.8% estrone</td>
</tr>
<tr>
<td>(PI: McTiernan) Can Res 2003</td>
<td></td>
<td></td>
<td></td>
<td>Both NS</td>
</tr>
<tr>
<td>ALPHA (PI: Friedenreich) JCO 2010</td>
<td>Canada</td>
<td>320</td>
<td>Aerobic Supervised &amp; Home-based 225 min/wk</td>
<td>-14% estradiol (sig.) -6.4% estrone (NS)</td>
</tr>
<tr>
<td>SHAPE (PI: Monninkhof) JCO 2009</td>
<td>UK</td>
<td>189</td>
<td>Combined aerobic &amp; resistance Supervised &amp; Home-based 150 min/week</td>
<td>No change estrogens</td>
</tr>
</tbody>
</table>
Infrastructure to conduct human trials

Behavioural Medicine Lab; University of Alberta, PI: K. Courneya
Breast Cancer and Exercise Trial in Alberta

Recruit 400 postmenopausal healthy women 50-74 years

Randomize

High volume exercise group
(5 days/wk x 60 mins/session @ 70-80% max HRR)

Moderate volume exercise group
(5 days/wk x 30 mins/session @ 70-80% max HRR)

Compare high vs. moderate exercise groups on endogenous sex hormones, obesity and inflammatory markers, insulin, glucose

Follow-up at 24 months: examine exercise maintenance and long term effect on biomarkers

PI: Friedenreich
Funded by: ACF & CCSRI

Slide courtesy of C. Friedenreich
Alberta Moving Beyond Breast (AMBER) Cohort Study

– Team Leaders: K. Courneya and C. Friedenreich
– Funded: CIHR Team Grant
– 1500 women with diagnosis of stage I-IIIc breast cancer
  • Self-report and objective physical activity
  • Maximal aerobic fitness and strength
  • Body composition
– Baseline, 1, 3, and 5 years (with disease outcomes at 5-10 years)

Slide courtesy of K. Courneya
Integration of PA Research into Clinical Trials Group CO.21

Individuals diagnosed with Stage II or III colon cancer

Baseline testing: Including exercise test

Randomize

Physical Activity Intervention + General Health Education Materials (Intervention)

General Health Education Materials (Control)

Assessment of disease-free survival at 3 years - up to 10 year follow up

Slide courtesy Kerry Courneya
Next Generation of Researchers
Exercise versus Weight loss?

PI: Anne McTiernan

Physical activity and prevention: Continued momentum in Canada

• CCS UBC Cancer Prevention Centre

• Canadian Breast Cancer Foundation 2020 Report
  – Prevention one of 5 key areas

• New funding opportunities