An emerging body of research has led to growing awareness among cancer survivors and medical staff of the potential value of exercise in preventing and managing some of these problems. Consequently, the subject of exercise within cancer survivorship has become one of increasing importance and interest for sport and exercise scientists.

For exercise performed during cancer treatment (typically chemotherapy, radiotherapy or hormonal therapy), significant small to moderate beneficial effects were indicated for aerobic fitness, body weight, body fat, quality of life and fatigue, and large effects for muscular strength (see Table 1 for details). The wide confidence intervals and high heterogeneity for some outcomes reflect the overall inconsistency in findings and methodological aspects within the developing body of evidence. Nonetheless the indications are that exercise-post-treatment has overall positive effects on functional and wellbeing outcomes.

Table 1. Meta-analysis results for effects of exercise interventions performed post-treatment (Spect et al, 2010)

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Trials</th>
<th>Effect Size</th>
<th>Confidence Interval</th>
<th>Heterogeneity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aerobic fitness</td>
<td>14</td>
<td>0.32</td>
<td>0.04 to 0.59</td>
<td>Moderate</td>
</tr>
<tr>
<td>Upper body strength</td>
<td>6</td>
<td>0.89</td>
<td>0.62 to 1.12</td>
<td>None</td>
</tr>
<tr>
<td>Lower body strength</td>
<td>7</td>
<td>0.90</td>
<td>0.12 to 1.68</td>
<td>High</td>
</tr>
<tr>
<td>Body weight</td>
<td>14</td>
<td>-0.18</td>
<td>-0.31 to 0.04</td>
<td>None</td>
</tr>
<tr>
<td>Body fat percentage</td>
<td>15</td>
<td>-0.16</td>
<td>-0.31 to 0.00</td>
<td>None</td>
</tr>
<tr>
<td>Quality of life and fatigue</td>
<td>11</td>
<td>0.40</td>
<td>0.06 to 0.74</td>
<td>High</td>
</tr>
<tr>
<td>Fatigue</td>
<td>14</td>
<td>-0.54</td>
<td>-0.93 to 0.01</td>
<td>High</td>
</tr>
<tr>
<td>Depression</td>
<td>10</td>
<td>-0.30</td>
<td>-0.43 to 0.05</td>
<td>Moderate</td>
</tr>
<tr>
<td>Anxiety</td>
<td>11</td>
<td>-0.36</td>
<td>-0.56 to 0.01</td>
<td>Moderate</td>
</tr>
</tbody>
</table>

*often data was summarily combined as 0.32, 0.89, 0.90, 0.18, 0.16, 0.40, -0.54, -0.30, -0.36

“An emerging body of research has led to growing awareness among cancer survivors and medical staff of the potential value of exercise in preventing and managing some of these problems. Consequently, the subject of exercise within cancer survivorship has become one of increasing importance and interest for sport and exercise scientists.”

Introduction
Currently, there are at least 2 million people living in the UK following a cancer diagnosis. Due to the aging population, earlier detection of cancer and continued improvements in cancer treatments, this number is predicted to rise by more than 3% each year (Hawkes et al, 2009). The most prevalent types of cancer are those with relatively high incidence and good prognosis (e.g. prostate, breast, bowel and skin). However, even after successful treatment, cancer survivors can face additional challenges such as increased risk for recurrent cancer and other chronic diseases, and persistent adverse effects on physical functioning and quality of life. Some of the chronic and late-appearing problems experienced by cancer survivors include fatigue, impaired sleep, depression, anxiety, lymphoedema, menopausal symptoms and impotence. An emerging body of research has led to growing awareness among cancer survivors and medical staff of the potential value of exercise in preventing and managing some of these problems. Consequently, the subject of exercise within cancer survivorship has become one of increasing importance and interest for sport and exercise scientists.

Background
Although adequate rest is vital at the time of cancer treatment and during recovery, an overemphasis on energy conservation can be problematic. Inactivity or immobility leads to loss of physical condition and muscular strength, making it difficult to perform even basic activities in daily life, which can lead to deconditioning in a study comparing the physical performance of remaining inactive in terms of the increased risk of other chronic conditions such as obesity, diabetes, cardiovascular disease and osteoporosis.

Guidelines for exercise prescription
There is insufficient evidence in the literature regarding the optimal components of exercise prescription for each cancer type. However, current guidelines on exercise prescription have recently been published by the American College of Sports Medicine for patients with cancer (ACSM, 2010). These are compatible with the American Cancer Society’s recommendation of 30 to 60 minutes moderate to vigorous-intensity physical activity at least five days per week for survivors who wish to maintain their quality of life. To date, no formal guidelines for cancer survivors have been published in the UK. However, health-related physical activity guidelines for the general population are appropriate for most cancer survivors. For example, recommendations for weight-loss complications or comorbidities that prohibit moderate-intensity exercise, avoidance of total inactivity is nonetheless advised.

Evidence on survival
There is preliminary evidence that in addition to functional and quality of life benefits, physical activity performed post-diagnosis may be associated with improved survival. A small number of epidemiological studies involving breast, colorectal and prostate cancer survivors have suggested that risk of cancer recurrence, cancer-specific and all-cause mortality in study results, no firm conclusions can be drawn at this stage about the relationship between physical activity and cancer incidence. Similarly, the precise mechanisms through which physical activity may influence cancer recurrence and mortality have not been established, but areas of ongoing research include the role of adiposity, metabolic and sex hormones, growth factors, immunological processes and chronic inflammation.

Evidence on adverse effects
Few adverse events associated with exercise have been reported from trials with cancer populations, nor have patients deemed at risk. For patients receiving current or recent treatment, general concerns relate to immunosuppression, fall, bone fracture and exacerbation of pain and other adverse effects associated with exercise interventions to minimise risks have been published (Smit et al, 2010). A particular concern is cancer survivors who have undergone removal of lymph nodes or excision of breast cancer and muscular fitness, quality of life and fatigue can be expected through exercise training.

Unless advised otherwise, cancer survivors should follow the health-related physical activity guidelines provided for the general UK population.

All cancer survivors including those with existing disease or who are undergoing difficult treatments should be encouraged, as a minimum, to avoid being sedentary. b

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References


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