Community-based Exercise Benefits Individuals with Multiple Myeloma: Findings of the Alberta Cancer Exercise (ACE) Hybrid Effectiveness-Implementation Study

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Background

- Multiple myeloma (MM) is an incurable cancer of the plasma cells. Treatment advances over the last 20 years have led to better disease control, and people with MM are now living longer.[1]
- MM predominantly affects older adults, with 60% of all diagnoses made in those 65 years of age or older, some individuals are not eligible to undergo a HSCT due to significant morbidity, poor performance status, or poor underlying health status.[2-4]
- Regardless of transplant eligibility, cancer treatment regimens for MM are intensive, prolonged, and associated with significant side effects.[5]
- In combination with treatment, MM may lead to loss of muscle mass, reduced cardiovascular fitness, and overall impaired physical function.[3]
- Exercise, particularly resistance training, helps preserve lean body mass during and after the cancer treatment.

Methods

- The Alberta Cancer Exercise (ACE) study offers supervised community-based exercise programming.
- Participants are eligible if they are on cancer treatment or within 3 years of treatment completion.
- The exercise program consists of two training sessions per week for a duration of 12 weeks.
- Programs are offered in-person and virtually and include group-based circuit or personal training formats with a primary focus on resistance exercise training.
- All sessions are supervised by cancer-trained exercise professionals.
- Outcomes are assessed at study baseline and post-intervention and include health related fitness, cancer symptoms and quality of life.

Outcomes

Outcomes were assessed at baseline and post intervention:

- Health related fitness;
  - 6-minute walk test
  - 30s chair sit to stand
- Questionnaires including:
  - Edmonton Symptom Assessment System (ESAS)
  - Functional Assessment of Cancer Therapy: Fatigue Scale (FACT-F)
  - EuroQol 5-Dimension 5-Level (EQ5D-5L)

Demographics

Table 1. Participant Characteristics

Characteristic	ACE DATA
ACE Overall Sample Size	N=2570
Number with MM	*n* = 101 (4%)
Age	Mean 64.6 (range from 37-82 years)
Sex	43 males:58 females
Treatment Status	82 (81.2%) undergoing cancer treatment

Results

- Statistically significant improvements were seen in:
  - 30s sit to stand test (+2.1; $p < 0.001$)
  - 6-minute walk test distance (+64.0 m $p = 0.041$)
  - 98 (97%) completed the program with 82.5% adherence
  - Overall quality of life (EQ5D-5L VAS (+3.7 $p < 0.001$)
  - Symptoms of pain and fatigue were largely unchanged
  - No serious adverse events occurred

Discussion

- Individuals with multiple myeloma (MM) demonstrated high willingness and ability to participate in a structured exercise program.
- Adherence rates were comparable to those reported in other cancer populations.
- The program led to statistically significant improvements in cardiovascular endurance and lower-body muscular strength, both key to maintaining functional mobility.
- Quality of life improved, while cancer-related symptoms (pain, fatigue) remained stable.
- No increase in adverse events was observed, supporting the safety and feasibility of exercise in this population

Conclusion

Individuals with MM can obtain benefit from community-based exercise for fitness and quality of life without exacerbating cancer-related symptoms.

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