

Lifting Frailty in New Brunswick

Summary

- Frailty is an age-related condition that causes reduced function and health. It leads to a decreased ability to handle minor stressors, and adults aged 65 and over are at a higher risk of experiencing frailty compared to the general population.
- Frailty is linked to increased rates of disabilities, multimorbidity, and hospitalizations among older adults, affecting their overall quality of life.
- To reduce the risk of frailty and help older adults living with frailty become more active, this pilot project introduced a 6-week blood flow restriction training (BFRT) program.
 - In the program, participants learned BFRT exercises under the supervision of staff to ensure proper technique and safety. The exercises allow the use of very little weight while maximizing some of the functional benefits associated with resistance exercise.
 - The program also included education on healthy living and nutrition.
- The main goal of the project was to assess whether participating in the BFRT exercise program benefits older adults living with frailty.
- Participants in the project included 38 older adults (65+; 19 women and 19 men), and 34 younger adults (aged 19-30 years; 17 women and 17 men).

HSPF Focus Area	Increasing Independence, Quality of Life, and Promoting Healthy Lifestyles
Project Start & End Date	March 14, 2022 – March 31, 2024
Organization/Agency	University of New Brunswick
Location	Fredericton
Principal Investigator(s)	Dr. Martin Sénéchal and Dr. Danielle Bouchard

Indicator	Impact / Outcome / Result
Improved Anthropometric Measures and Body Composition	<ul style="list-style-type: none"> • After six weeks of the BFRT program, the sample of younger adults demonstrated significantly increased weight, body mass index (BMI), total lean body mass (LBM), and relative LBM. • No significant changes were observed in the sample of older adults.
Improvement in 1RM testing (One-Repetition Maximums)	<ul style="list-style-type: none"> • Statistically significant increases were observed in both older and younger adults for the following measures: leg press, seated row, knee extension, knee flexion, and chest press. • Though both participant groups improved throughout the program, the sample of younger adults reported greater improvements in outcomes compared to older adults.
Improved Isokinetic performance	<ul style="list-style-type: none"> • Younger adults demonstrated statistically significant increases in knee flexion peak torque, knee extension average power, and knee flexion average power. • No significant changes were observed in the sample of older adults.
Improved Level of Fitness	<ul style="list-style-type: none"> • For the sample of younger adults, statistically significant improvements were observed for the number of chair stands and arm curls completed in 30 seconds, and the 8-foot timed up-and-go test. • Older adults demonstrated statistically significant improvements in the chair stands and arm curls.

Methods and Comparison

38 younger adults and 34 older adults performed BFRT exercises three times per week over a span of 6-weeks. Body composition was assessed using dual-energy X-ray absorptiometry and muscle strength was measured using 1-RMs. Muscular performance was measured using a HUMAC® NORM™ isokinetic dynamometer system. Outcomes were measured before and after the 6-week intervention.

Conclusions and Lessons Learned

- Overall, the findings from 6 weeks of BFRT indicated age-specific differences, with younger adults showing greater improvements for changes in LBM, muscle strength, and performance outcomes compared to older adults.
- Older adults enhanced their isokinetic performance and showed improvement in fitness levels.
- Significant differences for change in weight, LBM, arm curls test, and isokinetic performance were found between the two groups.

Recommendations

- Conduct further research with a larger sample size to better assess the impact of the BFRT program.

Next Steps

The project has not yet secured funding for scale-up and sustainability. The project is exploring funding opportunities for future research.

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