

IMPACT

University of Idaho
Extension

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StrongWomen™ Improves Strength and Health

The Situation

As people age, they lose approximately one-third to one half of a pound of muscle every year, especially after age 40. This translates into one to two percent of strength a year. As people lose muscle, it is usually replaced by fat. The shift from muscle to fat causes a decrease in metabolism which may partly explain why people gain weight as they get older. Another reason is that people become less active as they age. Loss of muscle also contributes to this. As people lose muscle, they automatically tend to become less active. Daily activities become harder to perform and they tire out more easily. The good news is that strength training has the power to prevent muscle loss, increase strength, and keep daily activities doable.

Our Response

Two University of Idaho Extension Educators provided 12 strength-training classes in Bear Lake County using the StrongWomen curriculum developed by Tufts University. The classes were conducted by a certified StrongWomen instructor (Laura L. Sant). Two classes were offered each week and the program lasted six weeks.

Each class lasted approximately 60 minutes and consisted of a warm-up, three arm exercises (bicep curl, overhead press, bent forward fly), five leg exercises (wide leg squat, standing leg curl, knee extension, side hip raise, toe stand), and a cool-down with gentle stretches.

Three evaluation tools were used to measure program outcomes. The first was a pre/post functional fitness assessment. The second evaluation

tool was a strength training log that each of the participants kept for the 12 classes. The third was a participant evaluation. Further information about each evaluation tool is provided below.

Pre/Post Functional Fitness Assessment

Two tests were used from the *Senior Fitness Test Manual*: 30-Second Chair Stand and Arm Curl.

- The 30-Second Chair Stand test is performed by counting the number of full stands that can be completed in 30 seconds with arms folded across chest. This test is used to assess lower body strength, needed for numerous activities of daily living. The tests come with normal values for age and percentile rankings to help assess participants' functional ability.
- The Arm Curl test is performed by counting the number of bicep curls that can be completed in 30 seconds holding a hand weight of 5 pounds. It is used to assess upper body strength, needed for performing household and other activities of daily living.

Strength Training Log

Each participant recorded the amount of weight used for the three arm and five leg exercises in each class.

Participant Evaluation

At the end of the 12 classes, participants were asked to fill out an evaluation in which they rated certain aspects of the program and their health.

Program Outcomes

Demographics

Eight participants completed the StrongWomen Program. The participants ranged in age from 45 to 69. All were Caucasian.

Functional Fitness Assessment

A paired sample t-test was used to determine if there was a significant difference between the pre and post averages.

- 30-Second Chair Stand – There was a 123% increase in the number of chair stands. The percentile rankings improved from an average of 31% to 51%. The paired sample t-test indicated that these changes were highly significantly different.
- Arm Curl – There was a 147% increase in the number of arm curls performed from pre to post assessments. The percentile rankings also improved from an average of 33% to 70%. The paired sample t-test showed changes to be highly significantly different.

Test	Pre (average)	Post (average)	t-test p-value
Chair Stand	12.12	14.88	0.003
Arm Curl	13.25	19.50	0.000

Strength Training Log

There was an increase between 122 – 179% in weight being lifted. The paired sample t-test indicated that the different of weight being lifted by the end of the program for the majority of the exercises was highly significantly different.

Exercise	Pre (Mean wt)	Post (Mean wt)	t-test p-value
Wide leg squat	0 lb	4.4 lb	0.013
Standing leg curl	4.8 lb	8.6 lb	0.000
Knee extension	4.8 lb	8.6 lb	0.000
Side hip raise	4.8 lb	8.6 lb	0.000
Toe stand	4.8 lb	8.6 lb	0.000
Bicep curl	3.6 lb	6.1 lb	0.000
Overhead press	3.6 lb	6.0 lb	0.000
Bent Forward Fly	3.6 lb	4.4 lb	0.010

Participant Evaluation

Various aspects of the program and participant health were rated using a five-point Likert scale (1 = Not at all, 3 = Somewhat, 5 = Very much) with positive results. The results are reported as an average of the participants' responses below.

Aspect	Rating
Overall satisfaction with class	4.88
Instructor helpful	4.88
Health is better because of program	4.25
Physically stronger	4.25
More energy	3.88
Sleep better	3.75
Joints less painful	4.00
More active	3.75

The results of the three evaluation tools indicate that participants experienced an increase in arm and leg strength, as well as other health benefits. Increased strength may improve functional ability so that people are able to perform activities of daily living and remain independent longer.

For More Information

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