Fitness Reaching Older Gen's

Southwest Nebraska Public Health Department

Program Instruction Manual

Revision Date: August 9, 2012

FROG

Fitness Reaching Older Gen's

Mission Statement

The mission of the FROG program is to reach out to adults 55 years of age and older by providing them with an exercise program designed to help improve mobility and strength as well as help prevent injuries caused by falls.

About This Manual

This manual was developed by Southwest Nebraska Public Health Department. The use of this manual is intended to provide the beginning instructor with guidelines and suggestions when beginning a FROG class. Each FROG class is unique and each instructor, after being initially trained as a FROG instructor, may choose to develop additional methods of implementing balance and resistance training techniques and should adjust their class routine to the composition of the class they are instructing. The idea is to make the class your very own.

Disclaimer

The exercises in this manual should only be performed with the prior consent of a physician. If participants experience any pain or discomfort, feel dizzy, lightheaded, have shortness of breath, and/or any other risk factor, they should discontinue the exercise until they have consulted with their primary healthcare provider.

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Introduction

According to the Center for Disease Control and Prevention, "each year, thousands of older Americans fall at home. Many are seriously injured and some are disabled. In 2002, more than 12, 800 people over age 65 died and 1.6 million were treated in emergency departments because of falls." The Center for Disease Control published a brochure titled, "Check for Safety, A Home Fall Prevention Checklist for Older Adults." (Refer to page 30 of the appendix.)

According to the Census Bureau, by 2050, people 65 and over will comprise an impressive 21 percent of the U.S. population. At the current rate, about 13% of America's population is age 65 or over. Many changes take place as we age. For example, within the cardiovascular system, the blood vessels, aorta, and heart muscle become stiffer, the heart increases in size, and the heart wall thickens. With the musculoskeletal system there is a decrease in muscle strength and endurance. In fact, by age 80, there is a 23% loss of muscle due to the age-related change of a decrease in the number and size of muscle fibers. These are all normal processes of aging and there is not much one can do to change the outcomes of aging itself; however, exercise has many benefits mainly evidenced by an increase in energy, strength, and balance and so much more.

Southwest Nebraska Public Health Department saw a need to decrease falls and improve balance among those participants residing throughout the eight county health district. The Fitness Reaching Older Generations (FROG) program was established through an Injury Prevention mini-grant in January of 2007.

The exercises performed focus on improving or maintaining cardiovascular function, strength, endurance, flexibility and agility. Participants use chairs to perform exercises in the seated or standing position. Common equipment utilized while carrying out the exercises include stability pads, dumbbells, resistance bands, soft weights (Thera-band) and one's own body weight. This program is offered to men and women age 55 and older who have prior written permission from their primary family care physician.

Instructor Recommendations

Instructors should have at least one of the following:

- Certification, training, licensing or a degree in:
  - exercise science or geriatrics, or;
  - physical therapy, or;
  - nursing
- In the case that the above does not apply to an individual, one may also become an instructor if they have experience or training in:
  - fitness instruction in a class setting and understands the components of physical fitness, or;
  - working with older adults in range of motion, aerobic/anaerobic, muscle endurance/strength, flexibility, and agility/balance exercises

The instructor will monitor and maintain each individual participant's progression throughout the instruction of the FROG program. The FROG program is only to be taught with **live instruction** and not by video or another electronic device.

Equipment

- **Home Safety Checklist**
- **Chair** - sturdy with no wheels or arms connected - (set up chairs in classroom so that there is at least two arms length in width between each chair)
- **Music** – low to moderate intensity
- **Elastic Resistance Bands** – refer to page 26-28 of the Appendix for examples
- **Thera Band Stability Bars (optional)**
- **Hand Weights** – dumb bells; soft weights; bar weights
- **Wall** - optional - some participants may need a wall for support for standing exercises
- **Any other equipment** as approved by SWNPHD

Program Rate of Progression

According to the American College of Sports Medicine and Centers for Disease Control, exercise for healthy adults has three stages of progression: initial, improvement, and maintenance.

Initial Stage (up to four weeks) - this stage should include light muscular endurance exercises and moderate level aerobic activities. Exercises should cause minimal muscle soreness, discomfort, and injury. Individual goals should be established early in the exercise program.

Improvement Stage (up to six months) - during this stage the goal is to provide a gradual increase in the overall exercise stimulus to allow for significant improvements in cardio-respiratory fitness. The exercise conditioning program of this stage is more progressive at a rapid rate than the initial stage. Age also should be taken into consideration when progressions are recommended; adaptation to conditioning may take longer in older individuals.

Maintenance Stage (over six months) - this stage is the maintenance stage of cardio-respiratory fitness that was developed in the improvement stage. The maintenance stage may also begin at any time the participant has reached pre-established fitness goals that were made during the initial stage. This stage is also a time to review the program goals and set new goals. It is important to include exercises and recreational activities that the individual or group will find enjoyable.

Refer to the "Training Progression for the Healthy Participant" chart on page 28 of the Appendix for further details.

Beginning a FROG Class

A medical clearance form will need to be completed prior to participation. This is to ensure the safety of the individual partaking in the exercises. Refer to page 29 of the Appendix for a copy of the Medical Clearance Form.

It is advisable to complete an initial fitness test at the start of a new class for all participants and for any new participant before they begin the program. This baseline data is useful as a comparison with future testing. Use this data to compare and determine the benefit of the program (improvement or maintenance compared to decline of functional ability). Please refer to page 30-40 of the Appendix for the Sr. Fitness Test and Scorecard to perform the evaluation(s).

After the initial testing, bi-annual or annual testing should be performed for each participant to evaluate the individual's progress and the program's effectiveness. Compare the bi-annual or annual testing with your baseline data that you collected at the start of the program. Always ask permission to perform the testing and never force anyone to participate that refuse to partake. Give them the option of the testing and explain that it is not a test but a tool to help show the progression that they are making with the use of the FROG program.

When starting a class, begin with two classes per week. The duration of each class should be approximately one hour. After the initial phase of four weeks, you may want to increase the frequency of the classes to three or four days per week.

Participants should be able to talk or carry on a conversation while performing moderate aerobic activity. If singing is easily done while being aerobically active, you may need to increase the level of activity. For further recommendations from the American College of Sports Medicine and the American Heart Association, refer to pages 41-43 of the Appendix.

A home safety checklist, as shown in the Appendix on page 30, titled "Check for Safety – A Home Fall Prevention Checklist for Older Adults" or one similar, should be handed out and provided to each member, including new members, throughout the year. A copy of the brochure is given to each new instructor and given information on how to obtain more copies. An explanation of the checklist should be provided and participants should be encouraged to review and complete the checklist.

On the next page, you will see an example of how a class may be scheduled. This schedule takes into consideration the recommended rate of progression as stated on page 5 of this manual.

Sample Class Schedule

Week 1 (Tuesday): Informational Session and Sign-Up (provide medical clearance forms)

Week 1 (Thursday): Senior Fitness Test (refer to page 29-38 of Appendix)
Repeat this test quarterly, biannually, or annually. (Quarterly will give results over a shorter period of time while annual testing will measure results over a longer period of time). On average, participants may be more compliant if they can see the immediate results with quarterly testing compared to the annual (over time) result.

Week 2 (Tuesday): Exercise begins
5 to 15 minute warm-up combined with light stretching (refer to page 9).
30-45 minutes Agility and Balance exercises (refer to the "Balance Training Techniques" on pages 11-15).
10 to 15 minute cool down (refer to page 10).

Week 2 (Thursday): 5 to 15 minutes warm-up and stretching
30-45 minutes Muscle Strength and Endurance exercises (refer to "FROG Exercises: Using Resistance Bands" section on pages 16-23).
10 to 15 minutes cool down

Week 3 (Tuesday): Warm up
Agility & Balance
Cool Down

Week 3 (Thursday): Warm up
Muscle Strength & Endurance
Cool Down

Week 4 (Tuesday): Warm up
Agility & Balance
Cool Down

Week 4 (Thursday): Warm up
Muscle Strength & Endurance
Cool Down

After week 4, increase the activity level by adding one more class to the week and alternate balance and agility with muscle strength and endurance (see below).

By month 4 or 5, you can add another class for a total of four classes per week.

Week 5 (Monday):

Warm up
Agility & Balance
Cool Down

Week 5 (Wednesday):

Warm up
Muscle Strength & Endurance
Cool Down

Week 5 (Friday):

Warm up
Agility & Balance
Cool Down

Week 12, repeat the Senior Fitness Test to evaluate the outcome of the program for participants thus far.

Once you have reached the sixth month, you should be at a maintenance stage meaning you are at your maximum fitness level or as in the example above, four class sessions per week (or more, depending on your preference and your participant's preferences).

Task Performance Instructions

Warm-up (5 to 15 minutes combined with light stretching)

March in place, move arms (flexing and extending shoulders, arm circles with shoulders abducted or arms extended out to side, rolling or rotating shoulders towards the back and front, extending and flexing elbows, rotation of the wrist joint in a circular movement), stepping side to side, walking, flexing and extending the knee joint.

Light stretching

Hold each stretch to a mild discomfort for 15 to 30 seconds with no bouncing movements. Remind participants to breath in and out normally. Stretch all major muscles and groups (shoulders, arms - biceps and triceps, wrist joints, upper/mid/lower back, torso/hips, upper and lower legs, and ankles).

Moderate aerobic activity, agility/balance exercises, muscle endurance and strength training (**30 to 45 minutes**)

Agility/balance exercises

After warming up and stretching, start with the agility and balance exercises. Research has shown that performing this type of exercise first improves response with participants. Impaired balance leads to falls. Balance depends on sensory input, muscle strength, attentional capacity, diseases, and medications. Programs that specifically train the control systems involved in balance may lead to improvement in the balance of the elderly and reduce the risk of falls. Performing exercises with elastic bands with balance-specific tasks has been shown to improve strength and balance and this type of exercise. With progression of the balance activities, you may need to increase the time of holding the balance position from 6 to 10 seconds.

Muscle endurance and strength exercises

Muscle endurance is the ability to sustain more muscle contractions with lighter weight for a given amount of repetitions or time. The amount of repetitions or number of contractions is generally **12 to 17** for muscle endurance.

Muscle strength is the ability to sustain a greater load during a small amount of time or performing fewer repetitions. Repetition of **6 to 8** is recommended for building muscle strength. All muscle endurance/strength exercises start with the larger muscle groups and multiple joints exercises and then progress to the smaller muscle groups, single joint exercises. Perform both aerobic and muscle endurance/strength exercises together to have more aerobic endurance in a class. Participants should always have controlled movements when performing muscle endurance/strength exercises with weighted objects.

Cool-down (10 to 15 minutes)

The purpose of the cool-down is to slow down the heart rate and blood flow to a slower pace during a light walk or slow movements. This would include deep breathing in and out. Stopping exercises abruptly after the aerobic and muscle endurance/strength exercises causes the blood to pool. During the cool-down, flexibility exercises are also important. They stretch the joints and muscles to a mild discomfort. Each static stretch should be held for 15 to 30 seconds while breathing in and out normally.

*****Some participants may experience Delayed Onset Muscle Soreness or DOMS which is brought on by not being physically active and then beginning an exercise program where the muscles and joints in the body are not accustomed to performing the movements. Another possible cause of DOMS is performing a different exercise or adding more weight. Do not get discouraged from DOMS. Possible solutions are to always have a cool-down phase in the exercise regime and always perform light stretching during the warm-up phase and cool-down phase. If problems persist, you may need to schedule an appointment with your physician.*

FROG Exercises: Balance Training Techniques

The goal is to assist individuals to adapt and modify balance control during predictable and unpredictable challenges to postural stability. You are training the person's ability to maintain the center of gravity within the base of support. You're not training people to maintain footing on an unsteady surface. Flailing the arms, rapidly bending at the waist in multiple directions, or constantly moving the body to maintain foot contact doesn't promote postural stability. Remind participants to hold the below positions for 6-10 seconds each and to breathe in and out slowly during each technique. Although the following pictures show the use of the balance bar during the balancing techniques, the use is optional and not a requirement.

Base of Support (this exercise utilizes the stability pad)

Semi-Tandem

Semi-Tandem means to stand with the heel of one foot touching the side of the big toe of the other foot.

Full-Tandem

Full-Tandem means to place the heel of one foot directly in front of the other foot's toes.

Up on Toes

Instruct participants to stand on their tip toes and hold the position for 6-10 seconds

One Foot

Instruct participants to stand on one foot for 6-10 seconds and then repeat with opposite.

Center of Gravity

Have participants stand on both feet and close their eyes for 10 seconds.

With eyes open, instruct them to place one foot behind the other on the stability pad and place the resistance band up around their upper back. Have them pull the resistance bands away from the body at the level of the chest.

Stepping in Different Directions

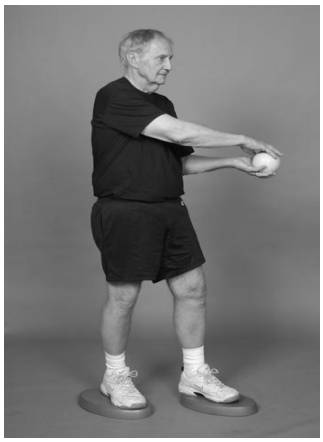
Place both hands on the hips, Stand on the stability boards.

Have participants step forward and backwards on and off the stability pad, alternating feet.

Reaching

Instruct participants to stand with feet shoulder width apart, take a step forward bringing arm up while flexing and pointing the front foot towards the ceiling and stretch forward. Hold for 6 to 8 seconds. Switch sides.

Perturbations (brief, rapid acceleration & deceleration)



Instruct participants to hold the weighted ball with both hands and move the arms from one side of the body to the other. Repeat for 6 to 10 seconds.

Oscillations (repetition, constant acceleration & deceleration)

Wrap the resistance band around the right ankle and place the loose ends under the left foot. Move right leg out to the side as far as they can comfortably and hold it for 6-10 seconds. Repeat on opposite leg.

Attention (concentration) – Cognitive Skills

Stand in a tandem position on the Stability bars and grab a hold of a ball. Bring the right arm up past the shoulder and extend the arm to the ceiling. Drop the ball and catch it with the other hand at the level of the abdomen. Repeat with the opposite side.

Stand on the stability bars, feet shoulder-width apart. Throw the ball up in the air to the left side of the body with one hand and catch it with the opposite hand. Repeat for the right side.

FROG Exercises: Using Resistance Bands

***Exercises may be performed while seated or standing*. Start with a lower resistance band if necessary. Control the band. Exercises should be performed slowly while controlling the resistance of the band. Breathe normally. Avoid holding your breath. Increase repetitions every two to three weeks, if possible, until you are able to do two sets of 8-15 repetitions. Rest 60 seconds between each set. Do not allow the participant to "bounce" the muscles with the repetitions. Move slowly and hold the position a few seconds before returning to the starting position.**

Upper Body

Chest Press

Starting Position: Place the band behind your back underneath your armpits with your elbows bent. Your fists should be even with your chest.

Finishing Position: Push your fists forward to the center of your body. Return to the starting position. (May be done while seated or standing).

Latissimus Pull-Down

Starting Position: Grasp the band in both hands, about shoulder width raise your arms over your head.

Finishing Position: Pull the band down in front of your face to chin part, and level while stretching the band. Return to starting position.

Latissimus Row

Starting Position: Move to the front edge of your chair. Extend both your legs in front of you, placing your heels on the floor. Place the band around your toes and grab one end of the band in each hand.

Finishing Position: Pull the band up your legs until your fists come to waist level. Feel your shoulder blades squeeze together. Return to starting position. Remember to keep your chest lifted and shoulders back.

Shoulder Press

Starting Position: Step on the band, placing one foot in the center of the band, and grasp one end of the band in each hand with palms facing up to the ceiling. Pull the band up to the level of the head.

Finishing Position: Stretch the resistance band by fully extending the arms above the head. Return to the starting position and repeat the number of desired repetitions.

Lateral Shoulder Raise

Starting Position: Step on center of the band with one foot. Grasp both ends of the band with hands. Let your arms hang straight down to your side.

Finishing Position: Raise the arms to shoulder level. Return to starting position. (May be done in seated or standing position.)

Bicep Curls

Starting Position: Step on the band with both feet in the center of the band and grasp one end of the band in each hand with palms facing up to the ceiling. Keep elbows pressed to the sides of your body.

Finishing Position: Bring your palms up to your shoulders while stretching the band and keeping your elbows pressed to the sides of your body. Return to starting position. (May be done while seated or standing.)

Triceps Extension

Starting Position: Grab the band in the center with your hands about shoulder width apart. Place your left fist on your right shoulder and bring your right elbow to shoulder height.

Finishing Position: Extend your right arm straight out from your body. Return to the starting position. Repeat exercise with left arm (May be done while seated or standing.)

Wrist Flexion

Starting Position: Sit on a chair. Step on the center of the band with both feet. Hold one loose end of the band in each hand. Supinate the palms by placing them facing up towards the ceiling. Rest the wrists on the knees.

Finishing Position: Flex the palms up and extend the palms back down to the starting position.

Wrist Extension

Starting Position: Sit on a chair. Step on the center of the band With both feet. Hold one loose End of the band in each hand. Pronate the palms by placing them facing down towards the floor. Resting the wrists on the knees.

Finishing Position: Flex the palms down and extend the palms up and back to the starting position.

Lower Body

Sitting Leg Press

Starting Position: Lift up your right foot and bring your knee towards your chest. Place the band under your foot while holding one end of the band in each hand.

Finishing Position: Extend your right leg forward and away from your body while stretching the band. Return to starting position. Repeat exercise with the left leg.

Standing Hip Adduction (can be done standing or sitting)

Starting Position: Wrap the band Around one ankle and step on the Loose ends with the other foot.

Finishing Position: Cross the leg/foot over the opposite leg/foot. Return to starting position.

Sitting Hip Adduction

Starting Position: Sit in a chair. Wrap the band around the upper thigh. Grab hold of the loose edges of the band.

Finishing Position: Pull on the loose edges of the band with the hand away from the body while moving the thigh towards the center of the body.

Sitting Hip Abduction

Starting Position: Wrap the band around the thigh and place the loose edges under the opposite thigh.

Finishing Position: Move thighs out/opposite of each other and back towards each other or the center of the Body.

Abdominal Exercise

Starting Position: Wrap the band behind the chair back while grasping the ends of the band with each hand.

Finishing Position: While contracting your abdominal muscles bring your shoulders forward, stretching the band. Return to starting position.

Spine Extension Exercise

Starting Position: Sit on the chair with the front of the body straddling the back of the chair. Wrap the band around the waist and the chair back.

Finishing Position: While holding on the loose edges Of the band with the hands, lean back away from the chair back, hold the position and then return by leaning forward towards the chair back.

Acknowledgements

Thank you to all instructors for their time and dedication to make the FROG program a success in the many communities throughout the eight county health district. Your enthusiasm and belief in the program has contributed to the program's sustainability. Thank you to the McCook FROG class, and Brenda McGuire, for agreeing to have your pictures used in this manual. A special thank you also goes to Brenda McGuire, for taking the time in reviewing the revised manual and offering changes and/or suggestions. Your input and your enthusiasm in developing area FROG classes has been substantial and appreciated.

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Appendix

MEMORANDUM OF UNDERSTANDING

Fitness Reaching Older Gen's (FROG) was developed by Southwest Nebraska Public Health Department for people aged 55 and older. The program was developed to decrease falls by improving strength, balance and coordination through an exercise program lead by a trained volunteer. This program was developed for all persons aged 55 and older living within the eight county health district.

The project will address provision of education materials, assessments for participants, training manuals, and presentations about the program. The overall goal of this project will be to implement sustainable FROG programs throughout the health district. It is the intent that this program will create a model that can be replicated throughout rural communities nationally.

As a participating institution, Southwest Nebraska Public Health Department (SWNPHD) agrees to:

1. Provide Program Coordinator with brochures and/or other educational materials.
2. Provide Program Coordinator with assessment test to record senior participant's fitness.
3. Provide Program Coordinator with a training manual.
4. Provide Program Coordinator with initial training for fitness program or as requested for new site development or staff attrition.
5. Evaluate fitness program as requested by Program Coordinator.
6. Update training manual as needed.
7. Provide training updates as requested with Program Coordinator.
8. Assist Program Coordinator with ongoing assessments as requested for senior participants.
9. Provide presentations about the program.

As a participating institution, the Program Coordinator and related entities, agrees to:

1. Provide a Program Coordinator for the FROG program.
2. Distribute brochures and/or other educational materials to senior participants.
3. Assess senior participant's fitness prior to each individual beginning the FROG program.
4. Additional training will be provided by SWNPHD as requested.
5. Provide SWNPHD with assessment data analysis without listing individual results. Reporting to be agreed upon by both parties of this agreement. All results from data analysis will be used for national reporting by SWNPHD for program accreditation.
6. NOT alter or make ANY changes to the FROG logo including color, quality, or any other changes. The logo must contain "Southwest Nebraska Public Health Department" under the picture of the FROG. Any use of the logo must pertain to the FROG program only and not of or for personal use or gain.

The Memorandum of Understanding (MOU) will take effect immediately and will remain in force from now until a written request is made by either institution to terminate the MOU.

Resistance Bands

The following are examples of Elastic Resistance Bands. Thera Band is only one brand of resistance bands and this brand is only used for an example. Please note that a different brand may vary on the weight according to the color. In any instance, please follow the manufacturer's instructions on the particular brand that you purchase.

Thera Band

Thera-Band Elastic Band Resistance - The force produced by bands and tubing is directly related to elongation. Each color will provide a specific amount of resistance at the same percentage elongation, regardless of initial resting length. For example, a 1-foot piece stretched to 2-feet (100% elongation) will have the same force as a 2-foot piece of the same color stretched to 4-feet. The force slowly increases as the band or tube is stretched.

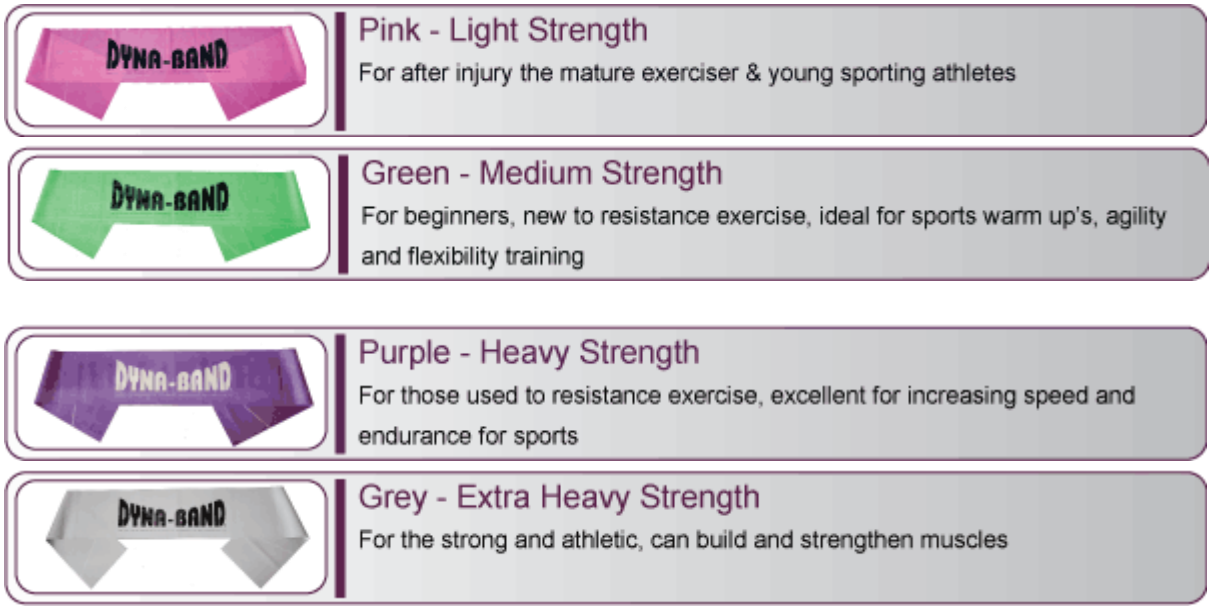
Average Force (pounds) for Thera-Band Elastic Bands

% Elongation	Yellow	Red	Green	Blue	Black	Silver	Gold
50%	2	2.5	3	4.5	6.5	8.5	14
100%	3	4	5	7	9.5	13	21.5
150%	4	5	6.5	9	12.5	17	27.5
200%	5	6	8	11	15	21	33.5
250%	6	7	9.5	13.5	17.5	25.5	40

Thera band (from top left to right: resistance bands, exercise/stability balls, flex bar, soft weights, and stability pads)

Theraband Color	Theraband Thickness	**Comparison:** pounds of pull needed to stretch a 12" band length to 24"
yellow	thin	2.5 lb
red	medium	4.5 lb
green	heavy	5.0 lb
blue	extra heavy	7.5 lb
black	special heavy	9.0 lb
silver	super heavy	15.0 lb

Dyna-Band



Training Progression for the Healthy Participant

Training Progression for the Healthy Participant				
Program Stage	Week(s)	Exercise Frequency (sessions/wk)	Exercise Intensity (%HRR)	Exercise Duration (min)
Initial Stage	1	2	40 – 50	15 - 20
	2	3-4	40 – 50	20 - 25
	3	3-4	50 – 60	20 - 25
	4	3-4	50 – 60	25 - 30
Improvement Stage	5-7	3-4	60 – 70	25 - 30
	8-10	3-4	60 – 70	30 - 35
	11-13	3-4	65-75	30 - 35
	14 -16	3-5	65-75	30-35
	17-20	3-5	70-85	35-40
	21-24	3-5	70-85	35-40
Maintenance Stage	24+	3-5	70-85	30-45

Medical Clearance Form

_____ is interested in participating in a cardiovascular, balance/agility, flexibility, and muscle endurance/strength program developed by Southwest Nebraska Public Health Department called "Fitness Reaching Older Generations (FROG)."

Your patient has indicated that he/she has one or more of the following health factors for which medical clearance from a doctor is being requested.

History of heart problems
Frequent chest pains
High blood pressure or taking medication for high blood pressure
Difficulty with physical exercise (dizzy spells, blurred vision, shortness of breath, skipped heart beats)
Over 60 years old (or adults 50-64 with chronic conditions, such as arthritis and Type 1 or Type 2 Diabetes)
Advice from a physician not to exercise
Muscle, joint or back disorder that could be aggravated by physical activity

I give medical clearance for _____
to participate in "Fitness Reaching Older Generations (FROG)." I understand that this program consists of:
3 to 5 minutes of warm-up stretching
45 to 60 minutes of cardiovascular, balance/agility, flexibility, and muscle endurance/strength (moderate intensity exercise or 50% - 70% of the client's maximum heart rate).
5 to 10 minutes of cool-down exercises with stretching or flexibility exercises

I have discussed any exercise restrictions or modifications to this program with my patient.

I understand that this clearance applies only to the "Fitness Reaching Older Generations (FROG)" program.

_____ _____
Physician's Signature Date

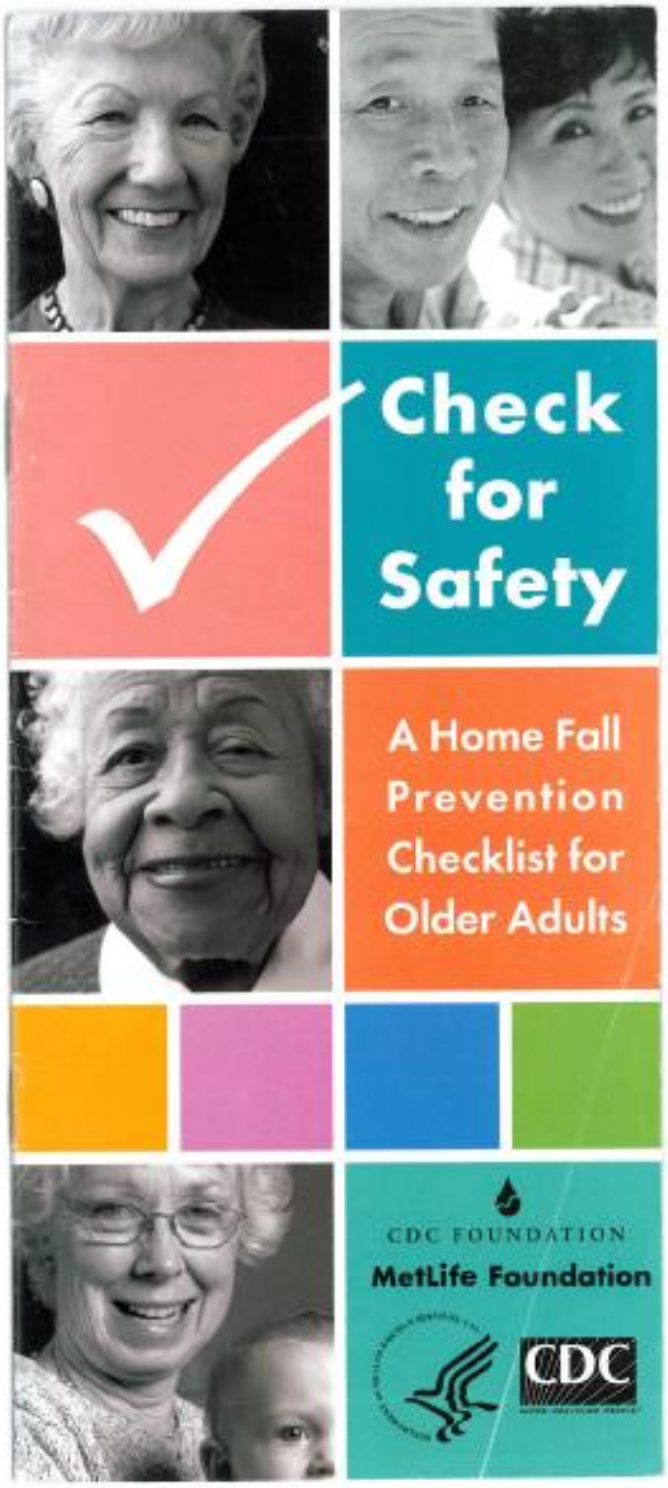
Physician's Name:_____

Address:_____

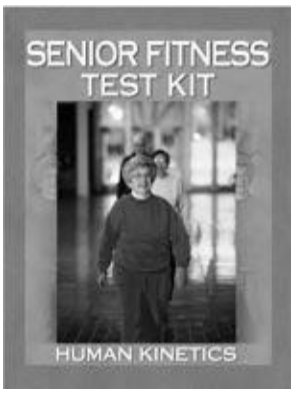
_____

Telephone #:_____

Home Safety Checklist



For information or ordering, contact Centers for Disease Control and Prevention, 770-488-1506, http://www.cdc.gov/HomeandRecreationalSafety/Falls/CheckListForSafety.html or Southwest Nebraska Public Health Department 308-345-4223.



Senior Fitness Test

SWNPHD has utilized the Senior Fitness Test Kit in the development of the FROG program. The Senior Fitness Test is a great resource for testing the fitness levels of older adults. The test results provide information to both the participant and the instructor regarding the participant's fitness level and compares that level to others in their age category.

Why test seniors?
Fitness is very important for those in their senior years. Older adults need to have adequate strength, flexibility, and endurance to accomplish everyday tasks. Assessing these components of fitness can detect weaknesses which can be treated before causing serious functional limitations.

When should the testing be done?
It is recommended that the test be given before the start of a FROG program, between two and six months and annually.

What tests are included?
The individual fitness test items involve common activities; such as getting up from a chair, walking, lifting, bending, and stretching. The tests were developed to be safe and enjoyable for older adults, while still meeting scientific standards for reliability and validity.

The following tests are part of the Senior Fitness Test Protocol, and are designed to test the functional fitness of seniors:

Chair Stand Test — tests lower body strength
Arm Curl Test — tests upper body strength
Chair Sit and Reach Test — lower body flexibility test
Back Scratch Test — upper body flexibility test
8-Foot Up and Go Test — agility test
Walk Test (6 minutes) or Step in Place Test (2 minutes) — the walk test is used to assess aerobic fitness unless the person uses orthopedic devices when walking or has difficulty balancing, in which case they do the step in place test.

Station 1: Chair Stand Test

The chair stand test is similar to a squat test to measure leg strength.
Purpose: To measure lower-body strength
Equipment: Straight-back chair (17 in.), stopwatch
Procedure: Place the chair against a wall, or otherwise stabilize it for safety. The subject should sit in the middle of the seat, with their feet shoulder width apart, flat on the floor. The arms are to be crossed at the wrists and held close to the chest. From the sitting position, the subject stands completely up, then completely back down, and this is repeated for 30 seconds.
Scoring: Count the total number of complete chair stands (up and down equals' one stand). If the subject has completed a full stand from the sitting position when the time is elapsed, the final stand is counted in the total.
Below is a table showing the recommended ranges for this test based on age groups.

Men's Results

Age	below average	average	above average
60-64	< 14	14 to 19	> 19
65-69	< 12	12 to 18	> 18
70-74	< 12	12 to 17	> 17
75-79	< 11	11 to 17	> 17
80-84	< 10	10 to 15	> 15
85-89	< 8	8 to 14	> 14
90-94	< 7	7 to 12	> 12

Women's Results

Age	below average	average	above average
60-64	< 12	12 to 17	> 17
65-69	< 11	11 to 16	> 16
70-74	< 10	10 to 15	> 15
75-79	< 10	10 to 15	> 15
80-84	< 9	9 to 14	> 14
85-89	< 8	8 to 13	> 13
90-94	< 4	4 to 11	> 11

Comments: the arms may be used for assistance or for safety if need.

Station 2: Arm Curl Test

Purpose: To measure upper-body strength
Equipment: 4 pound weight (women, AAHPERD), 5 pound weight (women, SFT), 8 pound weight (for men) and a chair without armrests, stopwatch.
Procedure: The aim of this test is to do as many arm curls as possible in 30 seconds. This test is conducted on the dominant arm side (or stronger side). The subject sits on the chair, holding the weight in the hand using a suitcase grip (palm facing towards the body) with the arm in a vertically down position beside the chair. Brace the upper arm against the body so that only the lower arm is moving (tester may assist to hold the upper arm steady). Curl the arm up through a full range of motion, gradually turning the palm up (flexion with supination). As the arm is lowered through the full range of motion, gradually return to the starting position. The arm must be fully bent and then fully straightened at the elbow. Repeat this action as many times as possible within 30 seconds.
Scoring: The score is the total number of controlled arm curls performed in 30 seconds.

Men's Results

Age	below average	average	above average
60-64	< 16	16 to 22	> 22
65-69	< 15	15 to 21	> 21
70-74	< 14	14 to 21	> 21
75-79	< 13	13 to 19	> 19
80-84	< 13	13 to 19	> 19
85-89	< 11	11 to 17	> 17
90-94	< 10	10 to 14	> 14

Women's Results

Age	below average	average	above average
60-64	< 13	13 to 19	> 19
65-69	< 12	12 to 18	> 18
70-74	< 12	12 to 17	> 17
75-79	< 11	11 to 17	> 17
80-84	< 10	10 to 16	> 16
85-89	< 10	10 to 15	> 15
90-94	< 8	8 to 13	> 13

Comments: it is important that the upper arm is stable throughout the test, and doesn't swing.

Station 3: Height and Weight

Purpose: To assess body mass index (BMI)
Equipment: Scale, 60-in tape measure, masking tape, and ruler (or other flat object to mark top of head)
Procedure: (weight)
Have the participant remove any heavy coats or sweaters; shoes may be left on.
Measure weight to the nearest pound, subtracting 1 to 2 lbs for shoes
Procedure: (height)
Position the tape measure on the wall, 20 in. up from the floor.
Have the participant stand against the wall with the back of the head lined up with the tape measure.
Lay the ruler on top of the participants head, extending it back to the tape measure
The score is the number of inches in height as indicated on the tape measure, plus 20 in. (the distance from the floor to the zero mark on the tape).
If shoes were worn, subtract 1 to 2 in. using your best judgment.

Body Mass Index (BMI) Manual Calculation

To manually calculate Body Mass Index (BMI):

1. multiply your weight (in pounds) by 703
2. divide by your height (in inches)
3. divide by your height (in inches) again.

Example: You weigh 135lb and are 5'5" tall. 135 x 703 =94905 ÷ 65"=1460.07 ÷65" = 22.46 BMI

Refer to page 45 of the Appendix for a BMI chart.

Station 4: Chair Sit and Reach Test

The Chair Sit and Reach test is designed to test the functional fitness of seniors.
Purpose: To assess lower-body (primarily hamstring) flexibility.
Equipment: Folding chair with a seat height of 17 in. that will not tip forward, 18 in. ruler
Procedure: The subject should sit on the edge a chair (placed against a wall for safety). One foot must remain flat on the floor. The other leg is extended forward with the knee straight, heel on the floor, and ankle bent at 90°. Place one hand on top of the other with tips of the middle fingers even. Instruct the subject to inhale, and then as they exhale, reach forward toward the toes by bending at the hip. Keep the back straight and head up. Avoid bouncing or quick movements, and never stretch to the point of pain. Keep the knee straight, and hold the reach for 2 seconds. The distance is measured between the tip of the fingertips and the toes. If the fingertips touch the toes then the score is zero. If they do not touch their toes, measure the distance between the fingers and the toes (a negative score), if they overlap, measure by how much (a positive score). Perform two trials.
Scoring: The score is recorded to the nearest 1/2 inch as the distance reached either a negative or positive score. Record which leg was used for measurement. Below is a table showing the recommended ranges (in inches) for this test based on age groups.

Men's Results

Age	below average	average (inches)	above average
60-64	< -2.5	-2.5 to 4.0	> 4.0
65-69	< -3.0	-3.0 to 3.0	> 3.0
70-74	< -3.5	-3.5 to 2.5	> 2.5
75-79	< -4.0	-4.0 to 2.0	> 2.0
80-84	< -5.5	-5.5 to 1.5	> 1.5
85-89	< -5.5	-5.5 to 0.5	> 0.5
90-94	< -6.5	-6.5 to -0.5	> -0.5

Women's Results

Age	below average	average (inches)	above average
60-64	< -0.5	-0.5 to 5.0	> 5.0
65-69	< -0.5	-0.5 to 4.5	> 4.5
70-74	< -1.0	-1.0 to 4.0	> 4.0
75-79	< -1.5	-1.5 to 3.5	> 3.5
80-84	< -2.0	-2.0 to 3.0	> 3.0
85-89	< -2.5	-2.5 to 2.5	> 2.5
90-94	< -4.5	-4.5 to 1.0	> 1.0

Reliability: The reliability of this test will depend on the amount of warm-up prior to testing. If retesting, you must ensure the same procedures are used each time, and the order of tests should also be standardized.
Contraindications: This test should not be done if you have severe Osteoporosis.

Station 5: Back Scratch Test

The Back Scratch Test measures how close the hands can be brought together behind the back.
Purpose: To measure upper-body flexibility
Equipment: 18-in. ruler
Procedure: This test is done in the standing position. Place one hand behind the head and back over the shoulder, and reach as far as possible down the middle of your back, your palm touching your body and the fingers directed downwards. Place the other arm behind your back, palm facing outward and fingers upward and reach up as far as possible attempting to touch or overlap the middle fingers of both hands. An assistant is required to direct the subject so that the fingers are aligned, and to measure the distance between the tips of the middle fingers. If the fingertips touch then the score is zero. If they do not touch, measure the distance between the finger tips (a negative score), if they overlap, measure the distance (a positive score). Practice two times, and then test two times.
Scoring: Record the best score to the nearest centimeter or 1/2 inch. Below is a table showing the recommended ranges (in inches) for this test based on age groups.

Men's Results

Age	below average	average (inches)	above average
60-64	> 6.5	6.5 to 0	< 0
65-69	> 7.5	7.5 to -1.0	< -1.0
70-74	> 8.0	8.0 to -1.0	< -1.0
75-79	> 9.0	9.0 to -2.0	< -2.0
80-84	> 9.5	9.5 to -2.0	< -2.0
85-89	> 10.0	10.0 to -3.0	< -3.0
90-94	> 10.5	10.5 to -4.0	< -4.0

Women's Results

Age	below average	average (inches)	above average
60-64	> 3.0	3.0 to 1.5	< 1.5
65-69	> 3.5	3.5 to 1.5	< 1.5
70-74	> 4.0	4.0 to 1.0	< 1.0
75-79	> 5.0	5.0 to 0.5	< 0.5
80-84	> 5.5	5.5 to 0	< 0
85-89	> 7.0	7.0 to -1.0	< -1.0
90-94	> 8.0	8.0 to -1.0	< -1.0

Comments: Stop the test if the subject experiences pain.

Station 6: 8 Foot Up and Go Test

The '8 Foot Up and Go' is a coordination and agility test for the elderly.
Purpose: To assess agility and dynamic balance
Equipment: stopwatch, straight back or folding chair (about 17 inches/44 cm high), cone marker, measuring tape, area clear of obstacles.
Procedure: Place a chair next to a wall (for safety) and the marker 8 feet in front of the chair. Clear the path between the chair and the marker. The subject starts fully seated, hands resting on the knees and feet flat on the ground. On the command, "Go," timing is started and the subject stands and walks (no running) as quickly as possible (and safely) to and around the cone, returning to the chair to sit down. Timing stops as they sit down. Perform two trials.
Scoring: Take the best time of the two trails to the nearest 1/10th second. Below is a table showing the recommended ranges in seconds for this test based on age groups.

Men's Results

Age	below average	average	above average
60-64	> 5.6	5.6 to 3.8	< 3.8
65-69	> 5.7	5.7 to 4.3	< 4.3
70-74	> 6.0	6.0 to 4.2	< 4.2
75-79	> 7.2	7.2 to 4.6	< 4.6
80-84	> 7.6	7.6 to 5.2	< 5.2
85-89	> 8.9	8.9 to 5.3	< 5.3
90-94	> 10.0	10.0 to 6.2	< 6.2

Women's Results

Age	below average	average	above average
60-64	> 6.0	6.0 to 4.4	< 4.4
65-69	> 6.4	6.4 to 4.8	< 4.8
70-74	> 7.1	7.1 to 4.9	< 4.9
75-79	> 7.4	7.4 to 5.2	< 5.2
80-84	> 8.7	8.7 to 5.7	< 5.7
85-89	> 9.6	9.6 to 6.2	< 6.2
90-94	> 11.5	11.5 to 7.3	< 7.3

Comments: for best results, practice the test once, and then perform it twice. A cane or walker may be used if that is the usual mode of walking. Push-off from the chair is allowed.

Station 7: 6 Minute Walk Test

For people who use orthopedic devices when walking, as well as people who have difficulty balancing, there is an alternative 2 minute step in place test (see page 38).
Purpose: To assess aerobic endurance
Equipment: measuring tape to mark out the track distances, stopwatch, and chairs positioned for resting.
Procedure: The walking course is laid out in a 50 yard (45.72m) rectangular area (dimensions 45 x 5 yards), with cones placed at regular intervals to indicate distance walked. The aim of this test is to walk as quickly as possible for six minutes to cover as much ground as possible. Subjects set their own pace and allowed to stop and rest if needed.
Scoring: measure the distance walked in 6 minutes to the nearest meter.
Males: Walk Distance (meters) = 867 – (5.71 age, yrs) + (1.03 height, cm)
Females: Walk Distance (meters) = 525 – (2.86 age, yrs) + (2.71 height, cm) – (6.22 BMI)

Comments: The test should be terminated if the examined person reports dizziness, nausea, excessive fatigue, pain, or if the examiner notices any other symptoms of concern. The examiners should be trained in recognizing these symptoms and the necessary action plan should be in place in case of medical emergencies.

2 *Minute Step in Place Test*

This test is performed as an alternative to the 6 minute walk test **for people who use orthopedic devices when walking, as well as in the case of people who have difficulty balancing**.
Purpose: This test measures aerobic endurance.
Equipment: tape for marking the wall, stopwatch, and wall.
Procedure: The subject stands up straight next to the wall while the level corresponding to midway between the patella (knee cap) and iliac crest (top of the hip bone). The subject then marches in place for two minutes, lifting the knees to the height of the tape. Resting is allowed, and holding onto the wall or a stable chair is allowed. Stop after two minutes.
Scoring: Record the total number of times the right knee reaches the tape level in two minutes. Below is a table showing the recommended ranges for this test based on age groups.

Men's Results

Age	below average	average	above average
60-64	< 87	87 to 115	> 115
65-69	< 87	86 to 116	> 116
70-74	< 80	80 to 110	> 110
75-79	< 73	73 to 109	> 109
80-84	< 71	71 to 103	> 103
85-89	< 59	59 to 91	> 91
90-94	< 52	52 to 86	> 86

Women's Results

Age	below average	average	above average
60-64	< 75	75 to 107	> 107
65-69	< 73	73 to 107	> 107
70-74	< 68	68 to 101	> 101
75-79	< 68	68 to 100	> 100
80-84	< 60	60 to 91	> 91
85-89	< 55	55 to 85	> 85
90-94	< 44	44 to 72	> 72

Scorecard: Senior Fitness Test

Name: _____ Test Date: ____/____/____

Male _____ Female_____ Age: _____ Birthday: ____/____/____

Height _____ Weight_____ BMI_____

Baseline Scorecard or Bi-Annual Scorecard

Test	Trial One	Trial two	Comments
Chair Stand (#in 30 seconds)			
Arm Curl (# in 30 seconds)			Weight used 2 3 4 5 6 7 8
2-Minute Step (# of steps)			
Chair sit-and-reach (nearest ½ inch + or -)			Extended leg L or R
Back Scratch (nearest ½ inch + or -)			Hand Over L or R
8-ft Up and go (nearest 1/10 second)			

Test Date: ____/____/____

Height _____ Weight_____ BMI_____

Comparative Follow-Up Scorecard or Annual Scorecard

Test	Trial One	Trial two	Comments
Chair Stand (#in 30 seconds)			
Arm Curl (# in 30 seconds)			Weight used 2 3 4 5 6 7 8
2-Minute Step (# of steps)			
Chair sit-and-reach (nearest ½ inch + or -)			Extended leg L or R
Back Scratch (nearest ½ inch + or -)			Hand Over L or R
8-ft Up and go (nearest 1/10 second)			

Normal Range of Scores for Women

	60-64	65-69	70-74	75-79	80-84	85-89	90-94
Chair Stand test	12-17	11-16	10-15	10-15	9-14	8-13	4-11
Arm Curl test	13-19	12-18	12-17	11-17	10-16	10-15	8-13
6-min. walk test	545-660	500-635	480-615	435-585	385-540	340-510	275-440
Chair sit-and-reach test	-0.5-+5.0	-0.5-+4.5	-1.0-+4.0	-1.5-+3.5	-2.0-+3.0	-2.5-+2.5	-4.5-+1.0
Back scratch test	-3.0-+1.5	-3.5-+1.5	-4.0-+1.0	-5.0-+0.5	-5.5-+0.0	-7.0 - -1.0	-8.0 - -1.0
8-foot up-and-go test	6.0-4.4	6.4-4.8	7.1-4.9	7.4-5.2	8.7-5.7	9.6-6.2	11.5-7.3

Normal Range of Scores for Men

	60-64	65-69	70-74	75-79	80-84	85-89	90-94
Chair Stand test	14-19	12-18	12-17	11-17	10-15	8-14	7-12
Arm Curl test	16-22	15-21	14-21	13-19	13-19	11-17	10-14
6-min. walk test	610-735	560-700	545-680	470-640	445-605	380-570	305-500
Chair sit-and-reach test	-2.5-+4.0	-3.0-+3.0	-3.0-+3.0	-4.0-+2.0	-5.5-+1.5	-5.5-+0.5	-6.5 - -0.5
Back scratch test	-6.5-+0.0	-7.5- -1.0	-8.0- -1.0	-9.0- -2.0	-9.5- -2.0	-9.5 - -3.0	-10.5 - -4.0
8-foot up-and-go test	5.6-3.8	5.9-4.3	6.2-4.4	7.2-4.6	7.6-5.2	8.9-5.5	10.0-6.2

ACSM Resistance Weight Training Guidelines

- Perform a minimum of 8 to 10 exercises that train the major muscle groups. Workouts should not be too long (longer than one hour are associated with higher drop out rates). Choose more multi-joint, compound exercises which involve more muscles.

- Perform one set of 8 to 12 repetitions to the point of fatigue.

- Perform exercises at least 2 days per week. Progress is made during the recuperation between workouts

- Adhere as closely to the specific exercise techniques (proper technique, exercise both sides of body, breathe, move your joints through a full range of motion, move in a controlled manner-don't let momentum move the weight)

- Use both concentric (shortening) and eccentric (lengthening) actions

- Use both single-joint & multi-joint exercises

Exercise sequence

1. Large muscle before small muscle group exercises
2. Multi-joint exercises before single-joint exercises
3. Higher intensity before lower intensity exercises

Training Frequency

1. 2-3 days per week for novice & intermediate training
2. 4-5 days per week for advanced training

Novice training:

- 8-12 repetition maximum (RM)

Intermediate to advanced training

- 1-12 repetition maximum in periodical fashion

1. Eventual emphasis on heavy loading (1-6 repetition maximum)
2. Moderate contraction velocity which is 1-2 seconds concentric (muscles are increasing in size or working) & 1-2 seconds eccentric contraction (muscles are deflating or reducing in size).
3. Emphasize multiple-joint exercises, especially those involving total body

Local muscular endurance training

1. Light to moderate loads
2. 40-60% of 1 repetition maximum
3. High repetitions (>15)
4. Short rest periods (<90 sec)

SPECIFIC WARM-UP

1. 12-15 reps performed before workout set
2. Approximately 50% of workout weight (10 RM)
3. 30 seconds to 3 minutes rest before workout set

Benefits of specific warm-up

1. Muscles & joints warmed up with exact mechanics that will be performed during workout set(s)
2. Muscle & joint is less susceptible to injury
3. Muscle can contract with greater intensity
4. Motor skill & breathing can be rehearsed
   Specific warm-up can be considered more effective for weight training than general warm-up (Ex. of general warm-up: jumping jacks, aerobic warm-up etc.)
   - No warm-up set is required for high repetition exercises (Ex. 20-30 or 20-50 reps on abdominal training). High rep sets are not as intense and serves as warm-up in itself.

Health Benefits associated with Resistance Training

1. Modest improvements in cardiorespiratory fitness
2. Reductions in body fat
3. Modest reductions in blood pressure
4. Reduction in glucose-stimulated plasma insulin concentrations
5. Improvements in blood lipid-lipoprotein profiles

Guidelines for Proper Stretching

1. Determine posture or position to be used. Ensure proper position and alignment prior to stretch.
2. Emphasize proper breathing. Inhale through the nose and exhale through pursed lips during the stretch. One may stretch with eyes closed to increase concentration and awareness.
3. Hold end points progressively for 30-90 seconds and take another deep breath.
4. Exhale and feel the muscle being stretched, relaxed, and softened so that further ROM is achieved.
5. Discomfort may increase slightly, but continue to focus on breathing.

6. Repeat the inhale-exhale-stretch cycle until the end of the available range for the day.
7. Do not bounce or spring while stretching.
8. Do not force a stretch while holding the breath.
9. Increased stretching range during exhalation encourages full body relaxation.
10. Slowly reposition from the stretch posture and allow muscles to recover at natural resting length.

Precautions for Flexibility Training

1. Stretch a joint through limits of normal Range of Motion (ROM).
2. Do not stretch at healed fracture sites for about 8-12 weeks post fracture, after which gentle stretching may be initiated.
3. In individuals with known or suspected osteoporosis, stretch with extreme caution (e.g., men older than 80 years and women older than 65 years, older persons with spinal cord injury).
4. Avoid aggressive stretching of tissues that have been immobilized (e.g., cast or splinted). Tissues become dehydrated and lose tensile strength during immobilization.
5. Mild soreness should take no longer than 24 hours to resolve after stretching. If more recovery time is necessary, the stretching force was excessive.
6. Use active comfortable ROM to stretch edematous joints or soft tissue.
7. Do not overstretch weak muscles. Shortening in these muscles may contribute to joint support that muscles can no longer actively provide. Combine strength and stretching exercise so that gains in mobility coincide with gains in strength and stability.
8. Be aware that physical performance may vary from day to day.
9. Set individual goals.

Basic Physical Activity Recommendations

According to the American College of Sports Medicine & American Heart Association the following recommendations have been made for:

Healthy Adults under Age 65

- Do moderately intense cardio 30 minutes a day, 5 days a week, OR;
- Do vigorously intense cardio 20 minutes a day, 3 days a week, AND;
- Do 8 to 10 strength-training exercises, 8 to 12 repetitions of each exercise twice a week.

Healthy Adults over Age 65

- Do moderately intense cardio 30 minutes a day, 5 days a week, OR;
- Do vigorously intense aerobic exercise 20 minutes a day, 3 days a week, AND;
- Do 8 to 10 strength-training exercises, 10-15 repetitions of each exercise twice to three times per week, AND;
- If you are at risk of falling, perform balance exercises, AND;
- Have a physical activity plan

*Moderate-intense aerobic exercise means you should still be able to carry on a conversation during exercise.

*If you can exceed the minimum recommendations than do it!

*Strength training is extremely important for ALL ADULTS, especially older adults, as it prevents loss of muscle mass and bone and is beneficial for functional health.

Body Mass Index (BMI) Chart

	NORMAL						OVERWEIGHT					OBESE										EXTREME OBESITY		
BMI	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**	**36**	**37**	**38**	**39**	**40**	**41**	**42**
Height (Feet-Inches)	**Weight** (Pounds)																							
4'10"	91	96	100	105	110	115	119	124	129	134	138	143	148	153	158	162	167	172	177	181	186	191	196	201
4'11"	94	99	104	109	114	119	124	128	133	138	143	148	153	158	163	168	173	178	183	188	193	198	203	208
5'	97	102	107	112	118	123	128	133	138	143	148	153	158	163	168	174	179	184	189	194	199	204	209	215
5'1"	100	106	111	116	122	127	132	137	143	148	153	158	164	169	174	180	185	190	195	201	206	211	217	222
5'2"	104	109	115	120	126	131	136	142	147	153	158	164	169	175	180	186	191	196	202	207	213	218	224	229
5'3"	107	112	118	124	130	135	141	146	152	158	163	169	174	180	186	191	197	203	208	214	220	225	231	237
5'4"	110	116	122	128	134	140	145	151	157	163	169	175	180	186	191	197	204	209	215	221	227	232	238	244
5'5"	114	120	126	132	138	144	150	156	162	168	174	180	186	192	198	204	210	216	222	228	234	240	246	252
5'6"	118	124	130	136	142	148	155	161	167	173	179	186	192	198	204	210	216	223	229	235	241	247	253	260
5'7"	121	127	134	140	146	153	159	166	172	178	185	191	198	204	211	217	223	230	236	242	249	255	261	268
5'8"	125	131	138	144	151	158	164	171	177	184	190	197	204	210	216	223	230	236	243	249	256	262	269	276
5'9"	128	135	142	149	155	162	169	176	182	189	196	203	210	216	223	230	236	243	250	257	263	270	277	284
5'10"	132	139	146	153	160	167	174	181	188	195	202	209	216	222	229	236	243	250	257	264	271	278	285	292
5'11"	136	143	150	157	165	172	179	186	193	200	208	215	222	229	236	243	250	257	265	272	279	286	293	301
6'	140	147	154	162	169	177	184	191	199	206	213	221	228	235	243	250	258	265	272	279	287	294	302	309
6'1"	144	151	159	166	174	182	189	197	204	212	219	227	235	242	250	257	265	275	280	288	295	302	310	318
6'2"	148	155	163	171	179	186	194	202	210	218	225	233	241	249	256	264	272	280	287	295	303	311	319	326
6'3"	152	160	168	176	184	192	200	208	216	224	232	240	248	256	264	272	279	287	295	303	311	319	327	335
6'4"	156	164	172	180	189	197	205	213	221	230	238	246	254	263	271	279	287	295	304	312	320	328	336	344