

Annette M. Musta

An Advanced Archery Training Program

The ultimate goal of your archery fitness program is to build the necessary muscular and cardiorespiratory systems to improve your archery skills, your competitive ability, and your score. Cardiovascular conditioning is necessary to provide the muscles used in your archery shot with oxygen and nutrition. The blood vessels also take away the wastes generated by the muscles, such as lactic acid and carbon dioxide. An efficient cardiovascular system is imperative in a competitive archer. Cardiorespiratory efficiency is developed through consistent aerobic training.

Advanced archers schedule cardiorespiratory training into their daily routine. Aim for four to six days a week with a minimum of sixty minutes of training per session.

At this level, it is necessary to have a heart rate monitor to keep track of how much time you spend in each heart rate zone. Heart rate monitors are available from sporting good stores. Look for a monitor with a programmable feature and a memory function. Both of these will be necessary to properly keep track of your cardio fitness sessions. In addition, you may want to consider features specific to your cardiovascular conditioning mode. If you are a swimmer, you will want to look for a waterproof monitor. Heart rate monitors are also made with lap time functions good for runners and fitness walkers. If you are a cyclist, look for a monitor that combines cycling functions such as speed and revolutions per minute with heart rate memory functions. Some monitors also have the ability to download each exercise session into your computer. These monitors often come with a fitness

diary software program and additional features like progress tracking and diagnostics.

Advanced Archery Fitness Program Overview

The intermediate archery fitness program has prepared you for the higher intensity of the advanced program. More so than before, it is imperative that you receive medical clearance to participate in a fitness program. The exercise intensity of the advanced program is extremely high; the program is strenuous. Do not start your fitness program at this level, complete the beginner and intermediate levels first (*see AFm Vol. 7 No.s 2 & 4*).

The advanced program introduces the concept of cycles to maximize the fitness level for the competitive archery season. A long cycle, called a mesocycle, is completed over several months. Each mesocycle contains several microcycles designed to optimize your performance in time for the competitive archery season. The advanced cardiovascular program consists of one fitness gain cycle, one maintenance cycle, and one recovery cycle.

The cardiovascular program stresses higher intensity bursts. The target heart rate range for these bursts is 85-90% of heart rate max. Maintain this level for 2-3 minutes and then reduce to a recovery heart rate of 60-65%. The recovery rate is maintained for 1-2 minutes. The sustained heart rate is 70-80% of heart rate max. The sustained heart rate is the rate you should maintain after your warm-up and when you are not in an intensity burst or a recovery period. Each cardiovascular exercise period should be maintained for 45-60 minutes. Schedule a car-

dio period 4-6 times a week. The table below gives the outline of a typical GAIN cardiovascular program:

Minutes	Heart Rate
5	Warm-up - Heart Rate up to 55%
5	Sustained Rate - 70-80%
2	Intensity Burst - 85-90%
2	Recovery - 60-65%
6	Sustained
3	Intensity Burst
1	Recovery
8	Sustained
3	Intensity Burst
1	Recovery
3	Sustained
3	Intensity
2	Recovery
4	Sustained
3	Intensity
1	Recovery
3	Sustained
5	Cool down— return heart rate to below 55%

The second phase is the maintenance cycle. Perform 45-60 minutes of cardiovascular exercise 5-6 times a week. A sample fitness MAINTENANCE cycle cardiovascular program is as follows:

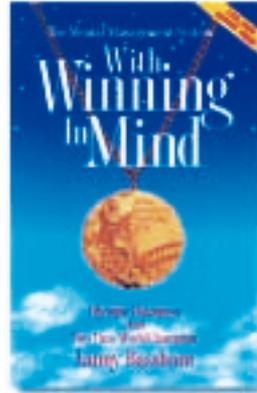
Minutes	Heart Rate
5	Warm up - up to 55%
10	Sustained - 70-80%
2	Intensity Burst - 85-90%
2	Recovery - 60-65%
10	Sustained
2	Intensity
2	Recovery
10	Sustained
3	Intensity
2	Recovery
7	Sustained
5	Cool down— return heart rate to below 55%

The RECOVERY cycle cardiovascular program consists of 45 minutes of cardio exercise 4-5 times a week. Maintain a heart rate of 65-80% throughout the exercise period.

The table below lays out one cardiovascular mesocycle consisting of sixteen weeks:

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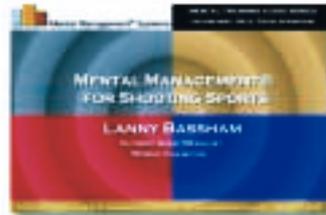
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Weeks	Program
1-3	GAIN
4	RECOVERY
5-7	GAIN
8	RECOVERY
9-12	MAINTENANCE
13	GAIN
14	MAINTENANCE
15-16	RECOVERY

The cardiovascular mesocycle can be repeated one after another in the competitive off season. Schedule your final mesocycle to conclude the week before your first competition. During the competitive season, microcycles consisting of one week of gain, followed by the appropriate weeks of maintenance, ending in a week of recovery leading up to a competition should maintain the conditioning the archer gained in the off season mesocycles.

Advanced Strength Training

The advanced strength training program consists of a mesocycle similar to the cardiovascular cycle outlined above. It is important to remember that the strength mesocycle and the cardiovascular mesocycle run concurrently. The advanced strength mesocycle lasts twelve weeks before it repeats. The strength cycle ends with a week of rest. This is the week of competition.

The advanced strength program combines a standard weight program divided into GAIN, ENDURANCE, and MAINTENANCE cycles. In order to properly perform these programs, you will need to have your one rep max (ORM) measured by a trained professional. Check with your local university for a qualified fitness professional. Some health clubs may have qualified professionals, but you may also be getting an untrained staff member. If this series of tests is done improperly, serious injury can result. You will need an ORM for each muscle group used in the exercises.

- The GAIN exercises use 80-85% of your ORM, 6-8 repetitions per set, 1-2 sets per exercise session. These exercises will increase muscular strength.
- The ENDURANCE exercises use 50-60% of ORM. Perform 15-20 repetitions, 3 sets. Each repetition should be performed slowly and steadily.
- The MAINTENANCE exercises use 60-65% of your ORM. The number of repetitions is 6-10 repetitions in 2 sets.

As with all strength exercises, it is necessary to give your muscles a 24 hour rest period in between exercise sessions. During the exercise session, give each muscle group at least a five minute break between sets. Rotate

through the exercises by doing an upper body exercise and then a lower body exercise.

GAIN exercises use extremely heavy weight. Always use a spotter when lifting this much weight. Learn to perform each exercise properly. Poor form will lead to injuries. You may experience some muscle soreness, but if you have persistent pain stop exercising immediately. If pain is sharp or does not go away after a day or two of rest, consult a physician. Always warm up prior to your strength training session. Perform muscle-specific stretches in between each set to maximize your workout session.

The Weight Exercises

Lower Body- Works legs and gluteus. These muscles are the base muscles. The archery shot starts here.

Free Weight- Squats, plie squats, lunges, calf raises, Romanian dead lifts

Machine exercises - hamstring curls, leg extensions, leg presses

Core - Works abdominals and the lower back. These muscles are the stabilizer muscles used extensively during the archery shot.

Crunches, oblique crunches, side crunches - weight resistance

The Bow, lower back extensions on a lower back machine

Upper Body- Works the upper back, the chest, the arms, and the shoulder muscles. These muscles are the power of the archery shot.

The exercises can be performed on either a machine or with free weights.

One arm bent row, chest presses, military presses, upright rows, biceps curls, hammer curls, triceps kick-backs, "skull crushers," deltoid raises

Machine exercises - seated row, triceps pulldown, lat pulldown, bench presses

Rotator Cuff- Works the muscles in the shoulder joint which stabilize the arm during the archery shot. (See *Archery Focus magazine—Volume 5, Number 2* for specifics on the following exercises.) These exercises are performed with a Theraband or light (1-3 pound) weights. These exercises are not done as GAIN cycle. Always use a light weight or resistance. Weight can be increased to 5-8 pounds maximum.

1. External Rotation
2. Internal Rotation
3. Inverted Arm Raise

4. Butterfly - From a standing position, grasp a weight in each hand. Bend arms 90 degrees at the elbows, hold arms in front of the face, palms facing in. Open arms by rotating at the shoulder, keeping elbows bent until palms are facing out. Return to starting position.

The Strength Program

Week	Program
1-3	GAIN
4-5	MAINTENANCE
6-9	ENDURANCE
10-11	MAINTENANCE
12	REST

Flexibility

A Note on Flexibility The advanced stretching program should target every muscle group. Yoga is an excellent choice for a whole body stretching program. Perform 30 minutes of yoga in the morning. Add muscle group stretches to your strength program. Before bed, choose a muscle group and perform 3-5 different stretches to optimize your flexibility. Flexibility exercises should be performed every day of the week.

Serious competitive archers treat their bodies with the same care and respect they treat their equipment. They will schedule each component of their fitness routine into their training day. A commitment to fitness will result in more efficient muscle function, which leads to a stable shot and a higher score.

Annette Musta is a certified personal trainer who owns and operates her own business, ARH Sports and Fitness in Pennsylvania. She has been shooting for 25 years, but not seriously (she says) until the last seven years. She has been a professional ballet dancer (which is why she is known around the ARCO Training Center as "the dancer") and is currently a licensed pilot. She is the founder and Executive Director of the Pass the Torch Foundation, which matches school age children with athletes training for international competition.



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