



TEXAS A&M
AGRI LIFE
EXTENSION

4=H Fitness Challenge



The Texas 4-H and Youth Development Program is pleased to announce the Texas 4-H Fitness Challenge. The Texas 4-H Fitness Challenge was developed by county Extension agents, 4-H and Youth Development Specialists, and other content experts to provide youth the opportunity to compete in an outdoor sporting event while testing their knowledge and skills in the areas of: sports nutrition, physical fitness, and careers associated with fitness. The Texas 4-H Fitness Challenge was developed based on current state and national data that suggest youth should be more active.



5 Areas of Physical Fitness

The Texas 4-H Fitness Challenge will focus on five main areas of physical fitness. These include:

Cardiovascular Endurance

Cardiovascular endurance is the most important aspect of fitness. It is basically how strong your heart is, which can potentially add years to your life. The heart is the most important muscle in the human body and if it is kept healthy then you can avoid numerous health problems. Another reason that cardiovascular endurance is important is because your heart controls the oxygen flow to all your muscles - meaning cardiovascular health has a direct impact on your performance, both endurance and strength wise.

Agility and Co-ordination

Agility refers to the ability to change the direction of the body abruptly or to shift quickly the direction of movement without losing balance. It is dependent on a combination of factors such as speed, strength, balance and co-ordination. The ability to turn quickly and side-step calls for good motor co-ordination. Together these two components are important to fitness because they provide a strong foundation for neuromuscular control and motor skill function as well as reduce the risk of injury.

Upper Body Strength

The common definition is "*the ability to exert a force against a resistance*". The strength needed for a sprinter to explode from the blocks is different to the strength needed by a weight lifter to lift a barbell. This therefore implies that there are different types of strength. Upper body muscles help maintain balance and support back health. These muscles assist in the functioning of daily life, allowing you to perform routine activities such as lifting, turning, running and walking. They also help improve posture and prevent conditions such as a hunched back.

Core Body Strength

The core refers to the muscles that attach to the spine, shoulder girdle and pelvis that provide the necessary stability to hold your body upright with good posture. The core is the link between the upper and lower body. It provides the transfer of energy between the two halves. Core muscles include abdominals, hip flexors and rotators, gluteals, shoulder and back muscle.

Flexibility

Flexibility is definitely one of the most important aspects of fitness and has a very substantial role in every other part. Flexibility, mobility and suppleness all mean the range of limb movement around joints. It is extremely important to maintain a high flexibility, as it will reduce the risk of injury in any sport ten-fold and will also improve your performance. For some, flexibility does not come naturally, but even so it should still be strived for.

Participation Rules

Eligibility

1. Participation is open to all junior, intermediate and senior, aged youth (4-H membership is required).
2. Age divisions are determined by a participant's age as of August 31 of the current 4-H year. For more information on age requirements please visit the Texas 4-H Rules and Guidelines (<http://texas4-h.tamu.edu>).
 - a. Junior Division – 8 years old and in the 3rd grade or 9-10 years old
 - b. Intermediate Division - 11 to 13 years old
 - c. Senior Division – 14 to 18 years old
3. There is no limit to the number of teams per county that can participate in the event. Each team must have three or four youth. Any county with less than three youth competing will not be eligible for team awards, but may still compete for individual awards. Teams may be paired with members of different age divisions, however in these situations they must compete in the age category of the oldest team member.
4. Substitution of team members should be made only if necessary. No more than one team member may be substituted, up to the day of the Fitness Challenge.
5. Each team will be required to pay a registration fee. This fee may vary from location to location depending on the cost to run the event.

Components to the Contest - The County/District/Regional/State Fitness Challenge will be broken up into three components. These components will be discussed further in the document.

a. Fitness Events.....50 pts

- 1) Cardiovascular Endurance – VO2 Max following a 1 mile run
- 2) Agility & Co-ordination –20 meter Shuttle Run
- 3) Upper Body Strength – 90 degree push-ups
- 4) Core Body Strength – Curl Ups
- 5) Flexibility – Back Saver Sit and Reach

b. Fitness Scenarios.....25 pts

c. Quiz..... 25 pts

Awards – Awards for fitness challenge will be determined by location. Also, awards will depend on sponsorships available at the time of the event. Potential awards that may be given at the event if sponsorships are available include:

- a. Overall Team Score 1st through 3rd (team award)
- b. Highest score on scenarios (team award)
- c. Test score (Team award)
- d. Highest score in Fitness Events (Team & Individual award)
- e. Individual Event Awards (Individual Award)
- f. Door Prizes

Description of Fitness Events and Scoring

1) Cardiovascular Endurance will be measured with an endurance run of 1 mile run/walk. The run may take place on a track, be conducted as a “cross country” type event, conducted as a “mud run,” or obstacle course. Walking may be interspersed with running; however, participants should be encouraged to cover the distance in as short a time as possible. Times will be recorded to the nearest tenth of a second. Following the event a VO2 Max calculated using the George et al. (1993) algorithms to calculate VO2max are:

$$\text{Males VO2max} = 108.844 - 0.1636W - 1.438T - 0.1928H$$

$$\text{Females VO2max} = 100.5 - 0.1636W - 1.438T - 0.1928H$$

Where W = Weight in kg, T = Time for the one mile run and H = Heart Rate at the end of the run

Points will be awarded based on the participant’s ability to meet the standards set forth by the Presidents Fitness Challenge and the Cooper Institute. Participants who meet the standards for being in the “Healthy Fit Zone,” Receive 10 points, participants in the “Needs Improvement Zone” receive 5 points, and participants in the “Health Risk Zone,” receive 1 point. No standards are in place for youth in the Junior category, therefore, they are encouraged to complete the challenge, but will receive 10 points for completing the run in any amount of time.

2) Agility & Co-ordination will be measured with the Shuttle Run. Two lines will be marked 30 feet apart and two blocks of wood will be placed behind one of the lines. Participants should be signaled to start the race, then run to the blocks, pick up one block and return it to the start line. Then they must run back, pick up the second and run back across the start line. It should be emphasized to participants that blocks cannot be thrown across the start line, and that they should run hard through the finish line. Times will be recorded to the nearest tenth of a second. Points will be awarded based on the participant’s ability to meet the standards set forth by the Presidents Fitness Challenge and the Cooper Institute. If the participant is in the “Healthy Fit Zone,” they receive 10 points. If they are in the “Needs Improvement Zone,” they receive 3 points.

3) Upper Body Strength will be measured using right angle push-ups. Participants will start in “push-up” position with hands under shoulders, arms straight, fingers pointed forward, and legs straight, parallel, and slightly apart (approximately 2-4 inches) with the toes supporting the feet. Keeping the back and knees straight the participant lowers the body until there is a 90 degree angle formed at the elbows with the upper arms parallel to the floor. A partner holds her/his hands at the point of the 90-degree angle so that the participant being tested goes down only until her/his shoulders touch the partner’s hand, then back up. The push-ups are done to a rhythm with one complete push-up every three seconds, and are continued until the participant can do no more at the required pace. The student should remain in motion during the entire three second interval. An observer will record the number of push-ups completed and points will be awarded based on the participant’s ability to meet the standards set forth by the Presidents Fitness Challenge and the Cooper Institute. If the participant is in the “Healthy Fit Zone,” they receive 10 points. If they are in the “Needs Improvement Zone,” they receive 3 points.

4) Core Body Strength will be measured using curl-ups. A measuring strip 3 inches wide for Juniors, and 4.5 inches wide for Intermediates and Seniors should be placed at the location participants will complete this test. Have the participant lie on a cushioned, clean surface with knees flexed 140 degrees, and feet flat on the floor. Make sure the arms are at side with hands placed palms down on the floor. The participant should position themselves so that their fingertips are touching the side of the measuring strip nearest to their head. Keeping arms in position, feet flat on the floor, participants should curl up (using abdominal muscles) sliding their fingers across the measuring strip until their fingers cross the opposite side. They should then repeat making sure their head touches the floor for each repetition. Participants should complete as many as they can in the correct form up to a maximum of 75. Points will be awarded based on the participant's ability to meet the standards set forth by the Presidents Fitness Challenge and the Cooper Institute. If the participant is in the "Healthy Fit Zone," they receive 10 points. If they are in the "Needs Improvement Zone," they receive 3 points.

5) Flexibility will be measured with the Back-Saver Sit and reach. The participant should remove his or her shoes and sit down at the test apparatus (A measuring scale is placed on top of a 12 inch by 12 inch box with the 9-inch mark parallel to the face of the box against which the participant's foot will rest. The "zero" end of the ruler is nearest the student. One leg is fully extended with the foot flat against the face of the box. The other knee is bent with the sole of the foot flat on the floor. The arms are extended forward over the measuring scale with the hands placed one on top of the other. With palms down, the participant should reach directly forward (keeping back straight and the head up) with both hands along the scale four times and holds the position of the fourth reach for at least 1 second. The test should be repeated for the other leg. Points will be awarded based on the participant's ability to meet the standards set forth by the Presidents Fitness Challenge and the Cooper Institute. If the participant is in the "Healthy Fit Zone," they receive 10 points. If they are in the "Needs Improvement Zone," they receive 3 points.

NOTE: For detailed guidelines for implementing the tests listed reference can be made to the Presidential Youth Fitness Program Teacher's Guide found at:

<http://www.presidentialyouthfitnessprogram.org/docs/Teacher%20guide%209-6.pdf>

Description of Scenarios and Scoring

Five scenarios will be answered prior to a fitness component. Scenarios will allow participants to demonstrate knowledge in each of the five areas of physical fitness addressed by the contest. All team members will answer the scenario individually and submit the answer to a judge. Each of the five scenarios is worth 5 points, for a total of 25 points available in the scenario portion of the contest. For team award tabulation the scenario scores will be combined. Example scenarios can be found below.

- 1) Jake is 16 years old and has a resting heart rate (RHR) of 59 beats per minute. Using the formulas below calculate Jake's Maximum heart rate (MHR), Heart Rate Reserve (HRR), and Training Intensity zone (TIZ) if he wants to workout at 40% of maximum.

$$\text{MHR} = 220 - (\text{age})$$

$$\text{HRR} = (\text{MHR}) - (\text{RHR})$$

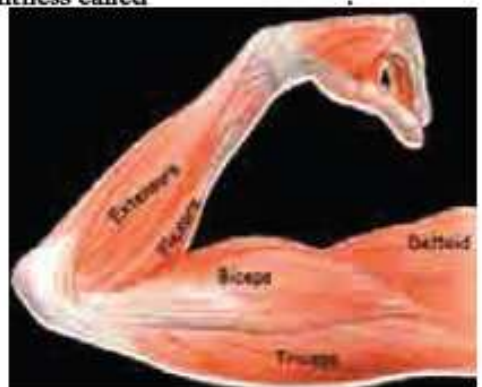
$$\text{TIZ} = (\text{HRR} \times .40) + \text{RHR}$$

- 2) Maria is halfway through her 200 meter race when she feels a sudden, sharp pain in the back of her thigh that stops her in mid-stride. This injury is likely a _____, which can be caused by poor flexibility. Torn or Strained Hamstring/Hamstring Injury
- 3) John has begun to participate in a vigorous exercise program. When he does this he increases his heart rate which is good for heart health, and pumps additional _____ into the bloodstream? Oxygen

Description of Test Questions and Scoring

The final component of the fitness challenge will be a 50 question written exam. Exam questions will be extracted from the resources listed in this guide. All team members will answer questions individually and submit their answers to a judge immediately upon completion. Each test question will be worth $\frac{1}{2}$ point. For team award tabulation, the exam score will be the average of the highest three team members scores. Example exam questions can be found below.

- 1) When you engage in a physical activity your heart rate _____.
A) Decreases
B) Increases
C) Remains the Same
- 2) Which of the following is a muscle that runs down the back of the upper arm and is used to extend the forearm?
A) Triceps
B) Biceps
C) Quadriceps
D) Pectoral
- 3) True of False: Nearly every movement requires the ability to balance.
- 4) The ability to change the body direction quickly and easily refers to _____.
A) Strength
B) Cardiovascular Endurance
C) Balance
D) Agility
- 5) The ability to bend, reach, and twist comfortably is the part of physical fitness called _____.
A) Balance
B) Strength
C) Flexibility
D) Agility
- 6) In the image to the right, label the following muscles:
Biceps, Triceps, Deltoid, and Extensors.
- 7) Which of the following activities is suitable for a cardiovascular workout?
A) Running
B) Bicycling
C) Swimming
D) All of the Above



4-H Fitness Project Suggestions

	Project Meeting Type	Project Participants Should Commit to Perform These Tasks on Their Own				
		Cardiovascular Endurance Training	Agility Training	Flexibility Training	Balance Training	Strength Training
Week #1	Fitness & Training Principals	Workouts should be 5 to 7 days each week. Exercises should include: Running Cycling Elliptical Aerobics Swimming	Workouts should be 2 days each week. Exercises should include: Shuttle Run Mini Hurdles Agility Dots	Stretches should always be performed following workouts. Additional stretching is recommended 3-5 days each week. Calf Stretch Hamstring Stretch Quad Stretch Hip Flexor Stretch Knee to Chest Shoulder Stretch Neck Stretch Upper Back Stretch	Workouts should be conducted 3 days each week. Exercises Include: Single Leg Squats Weight Shifts Side Lateral Raise	Workouts should be 2- 3 days each week, Exercises Include: <i>Upper Body</i> Push Ups Pull Ups Free Weights <i>Core</i> Ab Cruch Bridge Single Leg Ab Press & Double Leg Ab Press
Week #2	Body Image & Composition					
Week #3	Flexibility is Fabulous					
Week #4	Move it Move it - Agility					
Week #5	Stress & Relaxation					
Week #6	Career Exploration in Physical Fitness					
Week #7	Lifetime Fitness					

FITT Principal for Health-Related Fitness

FITT	Cardiorespiratory	Strength	Flexibility
F	5-7 days per week	2-3 days per week	3-5 days per week
I	60%-85% of maximum heart rate	Enough to enhance muscle strength and improve body composition	Enough to develop a full range of motion
T	20 to 60 minutes	8-12 repetitions of 8-10 different exercises (minimum)	4 repetitions of 10 to 30 seconds per muscle group (minimum)
T	Aerobic activity that uses large muscles and can be maintained continuously	Resistance activity that is performed at a controlled speed and through a full range of motion	Stretching activity that uses the major muscle groups

RESOURCES

Mobility Training by Norman Brook

Training Games by Eric Anderson

Training for Speed, Agility, and Quickness

Indian Running by Peter Nabokov

Training For Young Distance Runners by Larry Greene & Russ Pate

Sport Stretches by Michael J. Alter

Children's Running by Joyce Rankin

4-H Military Partnerships – “Up For the Challenge – Lifetime Fitness” <http://www.4-hmilitarypartnerships.org/doc13533.ashx>

Presidential Youth Fitness Program Instructor's Guide - <http://www.presidentialyouthfitnessprogram.org/docs/Teacher%20guide%209-6.pdf>