S:3 H: 9 GLO: 9-12 Exploring Types of Stretching
OKLAHOMA ACADEMIC STANDARDS: Physical Education
Source: http://people.bath.ac.uk/masrjb/Stretch/stretching_4.html

<table>
<tr><td><u>Objectives/ Student Targets</u></td><td rowspan="4"><u>Equipment & Technology Needed</u>:

1 Towel per Pair, one mat per student</td></tr>
<tr><td><u>Cognitive:</u> The students will describe how PNF stretching takes advantage of the increased range of motion provided by isometric stretching.</td></tr>
<tr><td><u>Affective:</u> The students will take initiative in improving their own flexibility.</td></tr>
<tr><td><u>Psychomotor:</u> The students will demonstrate proper static stretching techniques.</td></tr>
<tr><td colspan="2">Academic Vocabulary:
Stretching: Ballistic, Dynamic, Active, Passive, Static, Isometric, PNF</td></tr>
<tr><td><u>Introduction / Anticipatory Set:</u>

Have mats set out in the gym for all of the students before they get to class.
Ask your students why stretchings is an important in a fitness plan or in an active lifestyle.
Who knows when the best time of workout is to stretch? before, middle, or after? (is best for muscles to be warm when you stretch them, but good to stretch before a big workout.)
There are 7 different stretches we are going to go over today.
- ballistic
- dynamic
- active
- passive
- static
- isometric
- PNF</td><td rowspan="3"><u>Classroom Layout:</u>

Large open space such as a gym
Weight Room
Dance Room</td></tr>
<tr><td><u>Instant Activity:</u>

It is important for the muscles to be warm before stretching, so have your students do a 5-10 minute warmup. Could be a warmup you complete daily, jogging, jump ropes, etc.</td></tr>
<tr><td><u>Fitness Development</u>:

Flexibility will improve through a daily dynamic warm-up and static stretching during the cool down.</td></tr>
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Lesson Focus:	Teaching Cues:
First talk to your about ballistic stretching. You are not going to demonstrate this kind of stretch. Ballistic stretching uses the momentum of a moving body or a limb in an attempt to force it beyond its normal range of motion. This is stretching, or "warming up", by bouncing into (or out of) a stretched position, using the stretched muscles as a spring which pulls you out of the stretched position. (e.g. bouncing down repeatedly to touch your toes.) This type of stretching is not considered useful and can lead to injury. It does not allow your muscles to adjust to, and relax in, the stretched position. It may instead cause them to tighten up by repeatedly activating the stretch reflex. Starting at this point demonstrate the different types of stretches with your class, making sure they are following your cues and mirroring you. Dynamic stretching: - *Dynamic stretching*, "involves moving parts of your body and gradually increasing reach, speed of movement, or both." Do not confuse dynamic stretching with ballistic stretching! Dynamic stretching consists of controlled leg and arm swings that take you (gently!) to the limits of your range of motion. Ballistic stretches involve trying to force a part of the body *beyond* its range of motion. In dynamic stretches, there are no bounces or "jerky" movements. An example of dynamic stretching would be slow, controlled leg swings, arm swings, or torso twists. - Dynamic stretching improves dynamic flexibility and is quite useful as part of your warm-up for an active or aerobic workout (such as a dance or martial-arts class). - Dynamic stretching exercises should be performed in sets of 8-12 repetitions: - Perform your exercises (leg raises, arm swings) in sets of eight to twelve repetitions. If after a few sets you feel tired -- stop. Tired muscles are less elastic, which causes a decrease in the amplitude of your movements. Do only the number of repetitions that you can do without decreasing your range of motion. More repetitions will only set the nervous regulation of the muscles' length at the level of these less than best repetitions and may cause you to lose some of your flexibility. What you repeat more times or with a greater effort will leave a deeper trace in your [kinesthetic] memory! After reaching the maximal range of motion in a joint in any direction of movement, you should not do many more	range of motion static active point of pain tight loose relax breath Modifications: Incorporate a towel into your stretching program Add more or less stretches into the stretching program Only stretch as far as you can

repetitions of this movement in a given workout. Even if you can maintain a maximal range of motion over many repetitions, you will set an unnecessarily solid memory of the range of these movements. You will then have to overcome these memories in order to make further progress.

- Examples of dynamic stretches: arm swings, side bends, trunk rotations, leg swings, alternate toe touches, hamstring stretch

Active stretching:

- *Active stretching* is also referred to as static-active stretching. An active stretch is one where you assume a position and then hold it there with no assistance other than using the strength of your agonist muscles. For example, bringing your leg up high and then holding it there without anything (other than your leg muscles themselves) to keep the leg in that extended position. The tension of the agonists in an active stretch helps to relax the muscles being stretched (the antagonists) by reciprocal inhibition.
- Active stretching increases active flexibility and strengthens the agonistic muscles. Active stretches are usually quite difficult to hold and maintain for more than 10 seconds and rarely need to be held any longer than 15 seconds.
- Many of the movements (or stretches) found in various forms of yoga are active stretches.
- Examples of active stretching: hold bent arm up behind head, hold arms out to side and flex shoulders

Passive stretching:

- *Passive stretching* is also referred to as relaxed stretching, and as static-passive stretching. A passive stretch is one where you assume a position and hold it with some other part of your body, or with the assistance of a partner or some other apparatus. For example, bringing your leg up high and then holding it there with your hand. The splits is an example of a passive stretch (in this case the floor is the "apparatus" that you use to maintain your extended position).
- Slow, relaxed stretching is useful in relieving spasms in muscles that are healing after an injury. Obviously, you should check with your doctor first to see if it is okay to attempt to stretch the injured muscles.
- Relaxed stretching is also very good for "cooling down" after a workout and helps reduce post-workout muscle fatigue, and soreness.
- Examples of passive stretching: holding hamstring stretch with hand, shoulder stretch using wall, quad stretch using wall

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Static stretching:

- Many people use the term "passive stretching" and "static stretching" interchangeably. However, there are a number of people who make a distinction between the two.
- *Static stretching* involves holding a position. That is, you stretch to the farthest point and hold the stretch ...
- *Passive stretching* is a technique in which you are relaxed and make no contribution to the range of motion. Instead, an external force is created by an outside agent, either manually or mechanically.
- Notice that the definition of passive stretching given in the previous section encompasses *both* of the above definitions. Throughout this document, when the term static stretching or passive stretching is used, its intended meaning is the definition of passive stretching as described in the previous section. You should be aware of these alternative meanings, however, when looking at other references on stretching.
- Examples of static stretching: head bend with hand, calf stretch against the wall, runner's lunge, butterfly stretch

Isometric stretching:

- *Isometric stretching* is a type of static stretching (meaning it does not use motion) which involves the resistance of muscle groups through isometric contractions (tensing) of the stretched muscles. The use of isometric stretching is one of the fastest ways to develop increased static-passive flexibility and is much more effective than either passive stretching or active stretching alone. Isometric stretches also help to develop strength in the "tensed" muscles (which helps to develop static-active flexibility), and seems to decrease the amount of pain usually associated with stretching.
- The most common ways to provide the needed resistance for an isometric stretch are to apply resistance manually to one's own limbs, to have a partner apply the resistance, or to use an apparatus such as a wall (or the floor) to provide resistance.
- An example of manual resistance would be holding onto the ball of your foot to keep it from flexing while you are using the muscles of your calf to try and straighten your instep so that the toes are pointed.
- An example of using a partner to provide resistance would be having a partner hold your leg up high (and keep it there) while you attempt to force your leg back down to the ground.

- An example of using the wall to provide resistance would be the well known "push-the-wall" calf-stretch where you are actively attempting to move the wall (even though you know you can't).
- Isometric stretching is *not* recommended for children and adolescents whose bones are still growing. These people are usually already flexible enough that the strong stretches produced by the isometric contraction have a much higher risk of damaging tendons and connective tissue. *Kurz* strongly recommends preceding any isometric stretch of a muscle with dynamic strength training for the muscle to be stretched. A full session of isometric stretching makes a lot of demands on the muscles being stretched and should not be performed more than once per day for a given group of muscles (ideally, no more than once every 36 hours).
- The proper way to perform an isometric stretch is as follows:

1) Assume the position of a passive stretch for the desired muscle.
2) Next, tense the stretched muscle for 7-15 seconds (resisting against some force that will not move, like the floor or a partner).
3) Finally, relax the muscle for at least 20 seconds.

- Examples of isometric stretches: hamstrings (stand and put leg on bench), side split (one leg straight, other bent and over opposite knee, turn torso, knee on outside of opposite knee), partner holds leg up while you try and force it back to the ground

PNF stretching:

- PNF stretching is currently the fastest and most effective way known to increase static-passive flexibility. PNF is an acronym for proprioceptive neuromuscular facilitation. It is not really a type of stretching but is a technique of combining passive stretching and isometric stretching in order to achieve maximum static flexibility. Actually, the term PNF stretching is itself a misnomer. PNF was initially developed as a method of rehabilitating stroke victims. PNF refers to any of several post-isometric relaxation stretching techniques in which a muscle group is passively stretched, then contracts isometrically against resistance while in the stretched position, and then is passively stretched again through the resulting increased range of motion. PNF stretching usually employs the use of a partner to provide resistance against the isometric contraction and then later to passively take the joint through its increased range of motion. It may be performed, however, without a partner, although it is usually more effective with a partner's assistance.

- Most PNF stretching techniques employ isometric agonist contraction/relaxation where the stretched muscles are contracted isometrically and then relaxed. Some PNF techniques also employ isometric antagonist contraction where the antagonists of the stretched muscles are contracted. In all cases, it is important to note that the stretched muscle should be rested (and relaxed) for at least 20 seconds before performing another PNF technique. The most common PNF stretching techniques are:

1) the hold-relax: This technique is also called the contract-relax. After assuming an initial passive stretch, the muscle being stretched is isometrically contracted for 7-15 seconds, after which the muscle is briefly relaxed for 2-3 seconds, and then immediately subjected to a passive stretch which stretches the muscle even further than the initial passive stretch. This final passive stretch is held for 10-15 seconds. The muscle is then relaxed for 20 seconds before performing another PNF technique.
2) the hold-relax-contract: This technique is also called the contract-relax-contract, and the contract-relax-antagonist-contract (or CRAC). It involves performing two isometric contractions: first of the agonists, then, of the antagonists. The first part is similar to the hold-relax where, after assuming an initial passive stretch, the stretched muscle is isometrically contracted for 7-15 seconds. Then the muscle is relaxed while its antagonist immediately performs an isometric contraction that is held for 7-15 seconds. The muscles are then relaxed for 20 seconds before performing another PNF technique.
3) the hold-relax-swing: This technique (and a similar technique called the hold-relax-bounce) actually involves the use of dynamic or ballistic stretches in conjunction with static and isometric stretches. It is **very** risky, and is successfully used only by the most advanced of athletes and dancers that have managed to achieve a high level of control over their muscle stretch reflex. It is similar to the hold-relax technique except that a dynamic or ballistic stretch is employed in place of the final passive stretch.

- The initial recommended procedure for PNF stretching is to perform the desired PNF technique 3-5 times for a given muscle group (resting 20 seconds between each repetition). However, HFLTA cites a 1987 study whose results suggest that performing 3-5 repetitions of a PNF technique for a given muscle group is not necessarily any more effective than performing the technique only once. As a result, in order to decrease the amount of time taken up by your stretching routine (without decreasing its effectiveness), HFLTA recommends performing only one PNF technique per muscle group stretched in a given stretching session.

● Examples of PNF stretches: seated glute stretch, straight leg groin stretch Put the students in groups of 3-4 and have them put together a stretching program/sequence. They need to use 2 stretches from each category except ballistic stretching. You can give them a handout with examples of the different stretches or have them use their memories from the demonstrations you gave. Give them 10 minutes to put together their sequence. Assessment: Assess the sequences each group comes up with. Do they have 2 of each of the stretch categories? Are they performing the stretches with proper form? Do they have good attitudes? **Closure:** What is the purpose of developing a good stretching program? Which stretching category is the one you would most likely use? Why? Would you use more than one? Do you understand why there is such a big difference between ballistic stretching and the others? Why? Will you start using stretching in your own personal workouts more often?	