

INNOVATIONS 4PE



January's Teaching Tip:

Help your students develop functional movement skills by introducing agility ladder and/or agility ring activities into your instruction.

- Enhances Student Learning (visual, tactile and auditory)
- Creates Spatial Awareness (proprioception)
- Develops Patterned Movement Skill (dance, games, sport)

Learn more by becoming a [PREMIUM MEMBER](#) and gaining access to resources regarding Functional Movement Skills and Agility Ladder/Agility Ring Activities.

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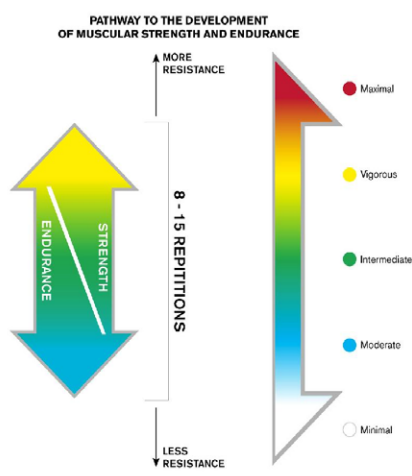
Issue: # 5

January 2009

Dear Tad,

We at Innovations4PE hope that you have enjoyed our 2008 newsletters. We will be continuing to develop the content of the Innovations4PE monthly newsletter & website throughout 2009 to support the development of high quality physical education programs throughout the United States. Here's to a successful New Year full of Innovations(4PE)!

PHYSICAL EDUCATOR QUICK LINKS



Static Stretching in Physical Education and Athletics

Misconceptions and Research

Tad Jinguji, MS, PES

As a consultant to various schools, districts and athletic teams, I have encountered a variety of misconceptions within the focus of exercise and movement. One of the most debated topics is the use of static stretching in physical education and sport. Many physical educators and coaches continue to use static stretching as part of their daily warm up (pre activity), others have removed it from their warm up and placed it at the end of their classes as part of their cool down (post activity), and others have removed the use of static stretching altogether or have never used it.



[Graphic of the Month: Pathway to the Development of Muscular Strength and Endurance.](#)

[Link of the Month: Fundamental Movement Skills: children's perspectives](#)

AGILITY VIDEOS POSTED



Agility Ladder Videos Available for [Premium Members!](#)

Lateral Movement Drills

1. Walk
2. Shuffle
3. Jog
4. Ali Shuffle

JANUARY & FEBRUARY EVENTS CALENDAR

January 21-24

Southwest District/Arizona
AHPERD Convention

January 23-24:

Nevada AHPERD Conference

February 4-7:

Eastern District Association
88th Annual Convention

February 22-24:

New Jersey Association for
Health, Physical Education,
Recreation and Dance Annual
Convention

The question that is posed to me over and over again by physical educators and coaches alike is: "what is the correct application for my class or team?" It seems that there are 3 schools of thought as it relates to pre activity static stretching:

- static stretching should be a part of the warm up
- static stretching should not be included in your warm up
- static stretching should be included, but only after the student or athlete is warmed up

It is apparent that there are many individuals among us that are willing to give their opinions or comment on the subject, but very few actually have the research based knowledge to understand how the body reacts to static stretching and how to utilize it accordingly within physical education and/or athletics. My approach to answering the question is quite simple and direct. I first inquire if we are discussing pre activity static stretching or post activity static stretching. My next question is directed at why static stretching is being used (what is the desired outcome?). This clarification helps me to be direct with my answer and assist in the development of the teacher/coach's knowledge. When it comes to static stretching, one must look at "when" it is being utilized to accurately answer the question. Pre activity static stretching is not recommended in the following situations:

- to prevent/reduce injury occurrence (research has not determined this to be true)
- to increase performance (research has shown that pre activity static stretching can actually decrease the potential for muscles to produce maximal force - for a period of 30-60 minutes)
- to prepare the body for dynamic activity (static stretching promotes muscular relaxation and therefore does not adequately prepare the neural system for dynamic activity)

However, teachers and coaches must remember that static stretching can positively impact the health, fitness and performance of their students and athletes when used appropriately. Static stretching will promote relaxation and increase flexibility levels when performed post exercise/activity. Research has shown that the mechanoreceptors that control the lengthening (Muscle Spindles) and tension (Golgi Tendon Organs) of muscles and tendons are more likely to allow lengthening to occur when they are fatigued. This is related to the fact that the mechanoreceptor's job is to inhibit the excessive stretching of muscles and tendons to prevent injury. Therefore, post exercise/activity static stretching will assist in the development of increased joint range of motion (flexibility) and promote the relaxation of muscles while directing them back to pre activity length and tension levels.

Physical educators and coaches need to develop an understanding of the concepts that they provide instruction for in their classes or on the playing field. This can only be accomplished by developing an in depth understanding of

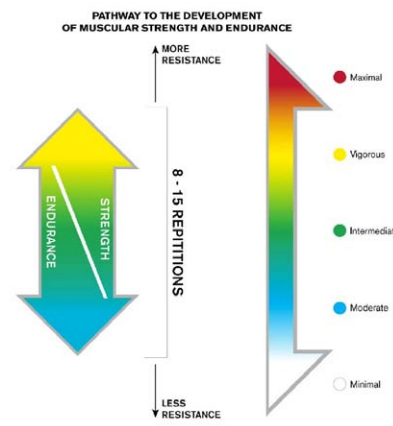
kinesiology; not by taking something that was demonstrated at a coaching clinic or a physical education conference and applying it in an incorrect manner to your student population- ultimately risking their health, safety and performance. Physical educators and coaches owe it to their students and athletes to provide current, research based practices that provide safe and effective methods of developing skill, health, fitness, and performance.

Muscular Strength and Endurance:

What is the "True" Definition for Physical Educators?

Tad Jinguji, MS, PES

I have had various conversations in the past 5 years or so with several Physical Educators, Exercise Physiologists and Strength/Conditioning Specialists about the "true" definition of Muscular Strength in relationship to Muscular Endurance (or Muscular Endurance in relationship to Muscular Strength). The conversations are usually extensive and exhaustive due to the fact that defining Muscular Strength/Endurance in relation to each other is an extremely difficult task.



Muscular Strength - the ability of a muscle to exert maximum force against resistance; 1 RM (Repetition Maximum).

Muscular Endurance - the ability of a muscle to exert sub-maximal force repeatedly over a period of time.

We all are familiar with the traditional definitions of Muscular Strength/ Endurance, but how do we answer the question: "is anything beyond the one repetition max (1 RM) threshold working Muscular Endurance?". Let's take a look at a 2, 3, or 4 sub-maximal repetition lift. Can one honestly say that an individual is not gaining Muscular Strength when you perform this? Or that you are gaining only Muscular Endurance because it is beyond the scope of the 1RM. I agree that a 1 RM test measures the individual's ability to exert maximal force against resistance; but does this lead us to believe that a sub-maximal 2, 3 or 4 repetition lift against resistance is a test of Muscular Endurance? I would have to disagree wholeheartedly with this statement and what it suggests. What it's suggesting is that there is an "absolute" answer when it comes to defining both Muscular Strength and Muscular Endurance and although scientific research can help us, there is an awful large "grey area" within the definition.

Muscular strength is the ability to generate force with a

muscle or group of muscles; whereas, muscular endurance is the ability to perform repeated contractions with a muscle or group of muscles. The difference between muscular strength and muscular endurance can be better understood by reviewing how each is assessed. Muscular strength is assessed by determining the maximal amount of force that an individual can apply against resistance-one time (1 RM), such as with a bench press or possibly a push up. Muscular endurance is assessed by determining how many times that an individual can apply sub-maximal force upon a weight (or body weight), such as bench-pressing x pounds twenty five times, or the total number of sit-ups, or push-ups one can perform.

Above all, it is important not to be confused by the assessments of muscular strength and of muscular endurance. The 1 RM lift is an assessment of Muscular Strength; however, Muscular Strength is developed by working with resistance that is correlated to 80% or more of the individual's 1RM. Muscular Endurance is assessed by using 70% or less of an individual's 1 RM and determining how many repetitions can be performed.

If physical educators want to be able to properly define the relationship between muscular strength and muscular endurance, they must look at the two in a way that defines their association with each other, not their differences. The most beneficial way that I have found to accomplish this is to use a Strength Training Continuum which states: If a workload is less than 70% of an individual's 1RM, then muscular endurance is the primary outcome of the activity (however, muscular strength is still being developed at a lower level); if a workload is greater than 80% of an individual's 1RM, then muscular strength is the primary outcome of the activity (however, muscular endurance is still being developed at a lower level); if the workload is between 70-80% of an individual's 1 RM, then muscular strength and muscular endurance are being developed somewhat equally. The use of the Pathway to the Development of Muscular Strength and Endurance provides the students with a visual and subjective measurement to increase their comprehension of the concepts of muscular strength and muscular endurance as used in physical education.

From here, a physical educator must begin to expand on the topic of strength training by applying the terms: overload, specificity and variation along with reviewing the FITT principle, only then can a student fully comprehend how strength training can effect their bodies and how to utilize strength training in their short and long term health/fitness goals.

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