

In regards to physical education at a secondary school level, sports and athletics as a whole will increase in competitiveness, overall athletic ability and potential opportunities for scholarships and professional positions. As students progress into their athletic careers, many have directed themselves into sport specialization, where the majority of their focus revolves around one single sport. It is therefore quite logical for educators in the field of physical education to inform students of the proper exercises and techniques that will target specific muscle groups resulting in overall improvement in their particular sport. The objectives of this Multi-Literacy Project are to demonstrate to students and teachers the difference between fast twitch and slow twitch muscle fibres, along with the different types of exercises that are associated with targeting these specific muscle groups. Implementing these exercises into regular workout routines will help students improve their athletic abilities in a particular sport. The majority of the following routines that are demonstrated are for students who do not necessarily have the privilege or access to weights or a gym. Regardless of what exercises are implemented, (whether it is directed towards fast twitch or slow twitch muscle fibres) these activities are targeted towards students who are relatively fully developed, which is necessary to reduce the risk of temporary or permanent injury.

This learning experience relies on the previous knowledge that has been established by the students throughout their years of study in physical education. It is expected, especially at an intermediate level that each student has been taught proper form, instruction and technique to properly and safely fulfill the task at hand. This can be related to the concept of scaffolding principles being implemented into their previous years of study. As the majority of students should be able to perform these tasks independently, it is expected that each activity will be performed with the proper technique and form. Basic approaches to lifting regarding high rep/low weight versus low rep/high weight are compared during this video, along with the concept of negative work targeting fast twitch muscle growth for explosive athletic tasks. This video helps illustrate the differences between Anaerobic (without Oxygen) and Aerobic (with Oxygen) systems. These three metabolic energy systems include: the ATP-CP (adenosine triphosphate - creatine phosphate) system, anaerobic glycolysis, and aerobic metabolism.

The muscle fibres that make up the framework of the human body have the remarkable ability to adapt to external stimuli and stress which in return leads to stronger and more efficient fibres (plasticity). In the article *Skeletal Muscle Fiber Type: Influence on Contractile and Metabolic Properties*, written by Juleen R Zierath and John A Hawley, it is stated: "These studies revealed that successful endurance athletes have relatively more ST than FT fibers in the trained musculature (Costill et al. 1976; Fink et al. 1977; Saltin et al. 1977). In contrast, sprinters have muscles that are composed predominantly of FT fibers (Costill et al. 1976)."

In conclusion, this Multi-Literacy Project is an educational guide for educators and also for students that revolves around integrating certain exercises that will result in the improvement in specific abilities for a particular sport. This demonstration breaks down the biological differences

between slow twitch and fast twitch muscle fibres that are associated with certain athletic fields. These exercises target muscle groups that are associated for particular sports that involve short and explosive bursts of energy (sprinting), along with activities which consist of endurance and the conservation of energy (marathons).

Costill D, Evans W, Daniels J, Fink W, Krahenbuhl G. Skeletal muscle enzymes and fiber composition in male and female track athletes. *Journal Of Applied Physiology*. February 1976;40(2):149-154. Available from: SPORTDiscus with Full Text, Ipswich, MA. Accessed November 23rd, 2015.

<http://journals.plos.org/plosbiology/article?id=10.1371/journal.pbio.0020348#pbio-0020348-Costill1>