

Biology with citation



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1a. When I went to the top floor for taking my Mathematics paper, I was literally running. While running for a shorter distance, people usually feel pain and weakness in their legs. This is due to the build up of lactic acid, which is generally caused by the lack of oxygen in the leg muscles. When there is ample oxygen inside muscle cells, they are able to harness energy from glucose through glycolysis in which glucose is broken down into pyruvate. Again, this chemical substance is shuttled to aerobic pathways such as Krebs's cycle and oxidative phosphorylation for more energy. However, when oxygen is present in a very less quantity inside the muscle cells, they temporarily convert pyruvate into a substance called lactate, which allows glucose breakdown for energy. This is also called as anaerobic energy production and as a result lactic acid is accumulated inside the muscle cells. Well, I was gasping because, I needed more oxygen to supply to my body cells for aerobic respiration and my legs were shaking because of a freight hormone, adrenaline - it is released when one feels some kind of fear, for example, examination fear in this case. In addition, the lactic acid accumulation increases the acidity of the muscle cells and disrupts other metabolites, and the muscle strains occur.

[http://www.associatedcontent.com/article/1079380/fitness_lactic_acid_buildup_during_pg2_pg2.html?cat=](http://www.associatedcontent.com/article/1079380/fitness_lactic_acid_buildup_during_pg2_pg2.html?cat=51)

[51](http://www.associatedcontent.com/article/1079380/fitness_lactic_acid_buildup_during_pg2_pg2.html?cat=51)

<http://www.elmhurst.edu/~chm/vchembook/601glycolysisrx.html>

1b. Well, what doctor often prescribes, as RICE is definitely different from the food rice that we eat everyday. The term RICE stands for the following:

Rest: Take rest and avoid activities, which are the prime causes of pain.

Ice Packs: Apply ice packs on the strained muscle for at least 20 minutes

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every 3 to 4 hours time interval. This practice helps relax muscles and pain goes away soon.

Compression: Wrap an elastic bandage around your muscle to help reduce muscle swelling.

Elevation: Try to keep the muscle elevated above your heart for quick recovery.

http://www.med.umich.edu/1libr/sma/sma_mstrains_sma.htm

2. Deltoid is a three-headed muscle that caps the shoulder. The three heads are anterior, lateral and posterior heads. The anterior head is attached to the humerus, the lateral originates on the collarbone and the posterior head originates on the scapula. The deltoid muscle is a mover and a stabilizer, as it lifts the arm up and it also helps press the end of the upper arm bone into the shoulder socket. Since it has got three heads, the muscle can easily extend and flex the arm.

http://www.meddean.luc.edu/lumen/MEdEd/GrossAnatomy/ue/main_act.html

<http://instruct.westvalley.edu/peters/Bio48F09HO08.pdf>

3. Tetrodotoxin (TTX) is a poisonous chemical found mostly within the liver, ovaries, intestines and skin. This chemical is found in Fugu – a puffer fish. The fish is really tasty but it may contain poisonous parts if sold by unlicensed vendors and unskilled preparation of puffer fish. TTX chemical is heat stable and its poisonous nature is not neutralized even after cooking fish. TTX binds to and blocks Sodium channels found on tissues such as nerves and muscles. The blockage of sodium entry through these ion channels makes these tissues non-functional. If a person consumes such toxins, the severity of the symptoms depends on the amount of TTX

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consumed. Since there is no antitoxin available against TTX, the treatment is largely supportive by nature.

<http://www.healthsystem.virginia.edu/internet/medtox/education/toxtalks/Sept08TTX.pdf>

[edu/internet/medtox/education/toxtalks/Sept08TTX.pdf](http://www.healthsystem.virginia.edu/internet/medtox/education/toxtalks/Sept08TTX.pdf)

4. Kneeling on the floor often causes inflammation of the knee, which is commonly known as housemaid's knee. However, the medical name of it is bursitis – a condition where a person feels sharp pain when kneeling on the floor. Knee bursitis occurs when the small fluid filled sac known as a bursa overlaying the kneecap becomes inflamed.

<http://healthmad.com/health/what-causes-knee-pain-when-kneeling-on-the-floor/>

<http://www.umm.edu/altmed/articles/bursitis-000022.htm>