

Lactic Acid – Fatigue or Fuel?

- Lactic Acid AKA Lactate (minus a hydrogen ion) or N-Lactoylphenylalanine (see figure below)
- Original article in 1922 by German physician Otto Meyerhof that electrocuted severed frog legs to show that lactic acid was formed via glycolysis. Which made people think that it was the culprit for muscle fatigue and pain. (Meyerhof)
- In 1985 physiologist Dr George A Brooks showed that lactate is a valuable fuel for our muscle fibers and then postulated that the hydrogen ion that is released when lactic acid becomes lactate is the problem. (Brooks)
- In 2004 Dr. Robert A Robergs showed that lactic acid is never created during anaerobic energy production. Instead, the hydrogen ions arise independently of the lactate. They showed that Lactic Acid isn't produced in the muscles so it cannot be the source of acidosis. Also Lactate decreases acidosis in muscle tissue both by consuming hydrogen ions and by pairing with them to exit the muscle fiber via transport proteins. (Robergs, Ghiasvand and Parker)
- Recent research by McKenna and Hargreaves states that "Fatigue during exercise can be viewed as a cascade of events occurring at a multi-organ, multi-cellular, and multi-molecular levels." (McKenna and Hargreaves)
- Lactate DOES NOT cause muscle soreness. Since lactate is a fuel source, it is utilized quickly and removed from both muscle tissue and blood soon after even intense exercise. It does not linger for days and is usually reduced to typical levels within an hour post exercise. (Caldwell)

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