**Caffeine, CYP1A2 Genotype, and Endurance Performance in Athletes**  
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**Amendments**None. **Introduction**  
Several studies have shown an improvement in endurance performance, but there has been significant variability in the amount of the effect caffeine displays.   
  
Some studies had such divergent results that the end result was a lack of improved performance from caffeine consumption; some of these studies showed increased performance for some and worsened performance for others.   
  
Genetically, there are two sets of genetic variations in the gene that encodes the information for the production of the caffeine metabolism enzyme CYP1A2. Due to polymorphisms, the CYP1A2 gene can lead to quick metabolism (AC genotype) or slow metabolism (CC genotype). People with a slow metabolism genotype are associated with having elevated risk of myocardial infarction, hypertension, and prediabetes when consuming caffeine.  
  
  
**Study Design**  
The researchers recruited 113 athletic men that trained at least 8 hours per week for most of the year, at least 3 years (101 athletes finished the study).The study design was a cross over design, meaning all the participants were exposed to each condition (caffeine or placebo/sugar). They were instructed to consume their normal diet and to avoid exercise 2 days prior to testing; however, they were also to stop caffeine intake one week prior to the experiments.   
  
There were two caffeine conditions:  
1. 2mg per kilogram of weight of caffeine.  
2. 4mg per kilogram of weight of caffeine.   
  
The testing was done using a bike set to a particular load (50W), and the load increased with each minute.   
  
They also had saliva samples taken to obtain cells to then find out which gene variant they possessed (slow metabolizing gene or fast metabolizing gene).  
  
49% of participants were fast metabolizers, 43% were slow metabolizers, and 8% were slow metabolizers (different gene variants leading to the same outcome).