Does cocaine increase athletic achievement?

Subject: marathon participant

1. Who should be included
   1. All participants in Chicago Marathon will be asked to participate. Those are interested but have a history of cocaine abuse will be excluded. Those that meet set criteria and are interested will be allowed to participate.
2. Operational definitions
   1. Exposure to cocaine
      1. Participants will receive 32 mg of cocaine intravenously
   2. Athletic Achievement:
      1. Time to finish marathon
   3. Cocaine:
      1. Lab synthesized pure cocaine, one batch will be prepared to ensure doses are uniform
3. Controlling for confounding variables: Athletic ability and cocaine tolerance
   1. Placebo: ½ of participants will receive saline intravenously other half will be given cocain
   2. Double blind: None of the participants know if they received the experimental or placebo drug and the researcher will not know what drug they are administering
   3. Random assignment: the participants in the study will be randomly assigned to the experimental or control group
   4. Large sample size: 45,000 participants in marathon will be asked to participate. Even if a small amount comply we still have a very large sample size
   5. Repetition: same experiment can be conducted during any other marathon event
   6. Individuals with a history of cocaine abuse will be excluded due to their higher risk level for cocaine abuse and ability to significantly affect the results.
4. Ethics
   1. No coercion: participants will be asked whether they want to participate. They can always say no.
   2. informed consent: inform them of the risks cocaine use can present. Participants will be asked if they have ever abused drugs or alcohol in order to determine if they are at a high risk level for developing a cocaine addiction
   3. anonymity and confidentiality: their identities will be kept a secret and they will be given the placebo or experimental drug
   4. low risk: the dose is not lethal but there could be a risk of developing an addiction, this would be mitigated by providing services to those who might need additional help. Furthermore before a sample is selected, potential subjects would be questioned on whether they have a history with addiction and if an individual has too high of a risk factor they would be excluded from the experiment
   5. Debriefing: after the experiment subjects will be informed of whether they were in the experimental or control group
5. Analysis of results
   1. The median time it took participants in the experimental group to finish the marathon will be compared to the median time it took participants in the control group.
   2. We expect the experimental group to have a lower median time.
   3. Statistics will be used to make sure the results aren’t just caused by chance. We will check to see if the p<0.05. We will plot data from both the experimental and control groups to get a bell curve and determine average distribution. We will then determine standard deviation and a Z score. We will use this data to determine whether the difference in marathon times of the experimental groups and control groups is statistically significant.
   4. When the experiment is repeated, the results of each subsequent experiment will be examined separately as in step C. then the averages of both the experimental and control groups will be compiled and C will be repeated again