**Maximizing My Speed**

*Am I a faster runner with or without shoes?*

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1. **Introduction.**

As a previous high school cross country and track & field athlete I was curious about my speed. Runners wear all different types of shoes: tennis shoes, distance shoes, track spikes, trail running shoes, and more. I have worn all different types, styles, and brands of shoes throughout my life. I have even done some light running barefoot. In consideration of the variety of running shoes, I have become curious to know if I am a faster sprinter with running shoes or barefoot.

Past experience would lead me to believe that track spike shoes would make an individual the fastest, as that is what most professional track & field athletes’ wear. Outside of track spikes, my initial prediction would be that wearing running shoes would make me faster than not wearing any shoes. The only way to know for certain is to run an experiment of my own and let the data tell me the truth.

This study will examine and compare running time trials with running shoes and without any shoes. Data will be collected in a JMP file that will be saved and stored in a folder along with other experiment information and files. The purpose of the study is to examine if footwear type is associated with speed/running time. The experiment is not designed to make generalizations to a larger population than the participant, thus to re-do/copy this study, the only insight or benefit provided is to the study’s subject.

1. **Methods.**
   1. For this experiment there will be only one experimental unit. The experimental unit will be the runner and there should also be a second individual to keep time for the running time trials. Because there is only one participant in the study, the results can only be applied to the runner and cannot be generalized to anyone else. Participants who might execute this study should be in good physical health and have prior running experience. Trials will be physically challenging, so the subject participating should have full disclosure of the study and what the trials entail prior to any activity. More details on the informed consent of the participant are listed in section III of the study protocol.
   2. Investigators of this study do not need any prior/relevant qualifications to administer this study. The investigators need access to the iPhone stopwatch application, a collegiate or 400-meter standard track, and should be able to identify the 100-meter stretch on one of the two straightaway sections of the track.
   3. Graphical user interface, application, table

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      Description automatically generatedThe subject/participant of this study will complete 54 100-meter sprints. Each trial should be timed on the iPhone stopwatch application and the timing will be done by one person for each trial. Running trails are to be split into two groups, 27 100-meter sprints with running shoes, and 27 100-meter sprints with no shoes/barefoot. The order of the 54 trials should be completely randomized. I randomized the order of my trials through JMP software.

The participant will be given 3 minutes to rest between trials. Times should be recorded after each trial and kept hidden from the subject until after all trials have been completed. In addition, running trials should be completed over the course of three days, meaning the study includes a block on day. The trials should be randomized within each day block, and there should be 9 running shoes trials and 9 barefoot trials each day. Data should be collected in three consecutive days beginning at the same time each day. Such data should be kept in a password or lock protected location.

* 1. The study will be conducted on a standard 400-meter track, but prior to the actual data collection, the researcher and participant should discuss the details and logistics of the experiment. The pre-meeting should take place in a private room to maintain the participant’s confidentiality. The participant should be thoroughly informed of the entire process of the study; expected time to complete trials, details of each trial, potential risks, details of the informed consent, and that they are allowed to leave the study at any time.

1. **Informed Consent**

Individuals participating in this study must sign off and agree to the informed content before any involvement in the experiment. Participants must be 18 years of age or older to agree to participate. The informed consent guarantees complete anonymity of the participant, full disclosure of each step of the experiment, and open dialogue throughout the entire process. Participants are encouraged to ask questions, bring up concerns, share ideas, and step away at any point in time if they feel uncomfortable or unfit.

Data being collected should also be kept safe and monitored to protect the participant’s confidentiality. This means that any data collected should be maintained on password-protected and encrypted computers or in locked cabinets.

1. **Debrief Statement for Potential Subjects**

Potential subject/participant, this experiment entails running a total of 5,400 meters over the course of 3 consecutive days. The subject will be asked to run 18 100-meter sprints each day and will be given 3 minutes of rest in between trials. Each day of trials should take about an hour, so a grand total of 3 hours over 3 days. The subject must have a pair of running shoes in good condition, meaning no holes, tears, missing parts of the sole, etc. If at any point in the experiment, should the subject feel unwell or unable to complete a trial, they are fully allowed to withdraw participation or receive extra resting time. In either case, this should be documented in the researcher’s conclusions/findings. The purpose of this study is to determine if you, the subject, are a faster runner with or without shoes. There are no ulterior motives or undisclosed details. Questions, concerns, and comments are encouraged and will be addressed with careful consideration.

Participants must consent to the above information and questions, comments, or concerns should be addressed before moving forward to the trials. There are no aspects of this study that are purposely hidden from the subject, thus there is nothing to be disclosed afterwards.