Study shows sex could be a better predictor of sports performance than gender identity

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Sex may be a more useful explanatory variable than gender identity for predicting the performance of athletes in mass-participation races, a [new paper](#) has found.

Published in *BMJ Open Sports and Exercise Medicine*, the authors believe their findings suggest it is valuable to include both sex and gender identity in data collection.

Dr. John Armstrong, King's, Dr. Alice Sullivan, University College London and George M Perry, an independent researcher from the U.S., conducted a study analyzing data on the performance of people who competed in the non-binary category of 21 races in the New York Road Runners database.

Outside of purely biological outcomes and criminology, little empirical work has been done to test the theory that gender identity is more important than biological sex as a cause of gender disparities in outcomes. The data set of 166 race times achieved by non-binary athletes within a data set of 85,173 race times was selected as it was the largest available consistently formatted data on non-binary athletes.

Since the race results do not provide the sex of non-binary athletes, the sex of non-binary athletes was either derived from previous races they had run, or where this wasn't available, the researchers used a novel technique to model the sex of athletes probabilistically based on their given names, using U.S. Social Security Administration data. Race times were used as the outcome variable in linear models with explanatory variables derived from biological sex, gender identity, age and the event being raced.

The researchers found a sex gap in race times between athletes who identify as non-binary, and that there is no evidence that the gap between biological males and biological females is less for athletes who identify as non-binary. The results also indicate that non-binary athletes may have slower race times than other athletes once sex and age are controlled for.

Dr. John Armstrong, Reader in Financial Mathematics at King's, said,

"Gender identity is clearly important to many people, but nevertheless sex matters.

"Given the lack of empirical evidence supporting gender-identity theory, one should not assume by default that gender-identity is a more powerful explanatory variable than sex. Being an objectively measurable binary variable, sex has considerable explanatory advantages over gender identity.

"Our results illustrate that if we want to understand the needs of gender non-conforming individuals, it is vital to control for biological sex as it is likely to play a significant role in any analysis. Both sex and gender identity should therefore both be considered useful explanatory variables in data collection."

Provided by King's College London