

Dying to Win? Olympic Gold Medals and Longevity

Russell Ackoff Doctoral Student Fellowship, 2014 Application

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Description

Large differences in mortality across and within countries are only partially explained by variation in income, education, diet, and other factors (Cutler et al., 2006). One possible determinant of health that remains particularly poorly understood is status, which can loosely be defined as relative economic or social ranking. While the biology and epidemiology literatures have advanced our knowledge about the correlation between status and health, several reasons explain our limited understanding of status. First, the concept of status is difficult to measure empirically. Second, the channels between status and health are complex, with causality likely running in both directions. Finally, status is often correlated with other factors, such as income, that may independently influence health. By examining a setting where such problems are minimal, my research attempts to shed light on how status affects long-term health. I compare mortality between Gold medalists and other finalists in Olympic Track and Field from 1896 to 1948 and explore behavioral mechanisms driving the correlation between status and health. Questions of how status impacts may have important implications for policy in the workplace, where both productivity and employee health enter the firm's objective function since firms finance their workers' health care.

The setting of Olympic Track and Field provides a number of advantages to analyze status and health due to the nature of competition. First, performance is measured objectively and the stakes of such competition are high, with an Olympic victory representing the pinnacle of the sport and carrying global recognition. Second, awarding status is rare, with the winner determined on a single day every four years. As a result, randomness is arguably more likely to influence the outcome compared to a contest judged over a longer time period. Third, the setting of Olympic Track and Field provides an opportunity to cut through potential endogeneity by comparing people who are physically similar and relatively young. In addition, income associated with winning is likely not a factor among these athletes due to the prevailing system of amateurism until the 1980s. Finally, I show that ability is likely not driving longevity differentials by empirically documenting that athletes who ever held a World Record do not live longer than other Olympic finalists. Taken together, these advantages lead to cleaner identification of the relationship between status and health compared to previous literature.

From a theoretical perspective, the relationship between health and higher status is ambiguous. On the one hand, higher status from winning may improve health by reducing stress and increasing self-esteem. Biological studies of non-human primates provide empirical support for this theory by documenting that a lower hierarchical ranking within the community is often associated with chronic stress and compromised immunity (Sapolsky, 2005). On the other hand, winning may harm health through a number of channels. The pressure to continue to be the best may increase stress or winning might harm health by inducing complacency, since once someone has reached the top, the only place to go is down; recent research in personnel economics suggests informing employees of their relative performance induces top performers to exert less effort in the future (Barankay, 2012). How status affects health is thus an empirical question.

My preliminary analysis has produced promising results. Matching data on Olympic finishing order with each athlete's date of birth and death, I find the longevity of Olympic Track and Field athletes is highly correlated with whether they win or lose. The data, collected from SportsReference.com, allow me to control for observables like height, weight, country, event, and year of birth, which may also be correlated with both finishing place and longevity. Interestingly, the sign of the correlation hinges on whether the athlete competes in an individual event or a team event. In team events, winners live longer than losers. But in individual events, winners die earlier than losers. Although these results may initially appear conflicting, my preliminary analysis focusing on the concept of relative performance provides suggestive evidence of specific behavioral mechanisms that may explain these patterns. An athlete's ranking before the Olympics can be viewed as the reference point (Koszegi and Rabin, 2006) by which he judges performance. While research on reference-dependent utility has been difficult to test outside of the laboratory (Abeler et al. 2011, Crawford and Meng 2011), my setting allows me to clearly measure prior performances that arguably serve as expectations-based reference points. I am seeking additional resources from the Russell Ackoff Doctoral Student Fellowship to collect additional data that would allow me to further extend this line of research.

As a preliminary investigation, I have compiled a ranking of the top 40 performances during the four-year period before each Olympics, and compare this pre-Olympic ranking to the order of finishers in the Olympic final. I am looking to extend this to the top 100 performances to improve the measurement of my “expectations” variables. My results so far are consistent with the importance of expectations: using this empirical measure of relative performance based on the “distance” from each athlete's pre-Olympic ranking, I document that athletes who surpass their expectations live longer than those who either met or performed worse than their expectations, conditional on finishing place. On average, Gold medalists were ranked near the top of the pre-Olympic ranking, while losing athletes were ranked considerably lower before the Olympics, thus exceeding their expectations. At the same time, athletes who were considered “favorites” based on their pre-Olympic ranking but lost die earlier than other losers. In team events, I propose to measure relative performance with respect to one's teammates. My preliminary analysis suggests this may partly explain why losers in team events die earlier. Using the times recorded by each leg of the 4x400 meter relay, slower team members die earlier than faster members within losing teams. Yet mortality does not differ between faster members of losing teams and all members of winning teams. Slower members on losing teams perhaps feel guilty for “letting their teammates down.” As a falsification test, I intend to collect data on the birth and death dates of Olympic rowers over the same time period. Unlike in Track, an individual's performance on a boat with two or more rowers is unobservable. As a result, rowers among losing teams cannot objectively point to the weak link in a particular race the same way that Track athletes can. I thus expect to observe less within-team variation in longevity among losing teams in rowing.

In addition to measuring reference-points, I am also seeking to collect data on newspaper coverage of Olympic athletes. Differences in media coverage may signal the relative importance of different events or particular athletes. While amateurism prevented athletes from being directly paid for their performance, news coverage may indicate other rewards that may have first-order effects on health. I plan to collect information for each athlete in my sample from the website newspaperarchive.com, tracking the number and timing of news stories.

References

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