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ABSTRACT

We provide evidence that CEO leisure consumption can benefit shareholders. We measure leisure consumption primarily by CEO marathon participations, which indicate time-consuming investments in physical fitness. Panel and IV regressions as well as stock returns around marathon participations and sudden CEO deaths suggest that CEO leisure consumption has positive net benefits associated with higher firm value. Consistently, we find that professional investors more likely buy firms led by CEOs who run marathons. Our results contrast the widespread view that leisure consumption generally reflects costly managerial shirking and indicate that what matters is not whether CEOs consume leisure, but how.

JEL classification: G30, G11, J24

Keywords: CEO leisure consumption, CEO fitness activities, firm value, mutual fund trades, shirking

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An unresolved question in agency theory is how much CEOs should work. In general, CEOs should exert the amount of effort that maximizes shareholder value. However, shareholders can neither observe effort directly, nor evaluate precisely whether CEOs' actions are in their interest. In this context, a widespread view is that leisure consumption reflects CEOs' tendency to shirk their responsibilities at the detriment of shareholders. Consistent with agency as an explanation for CEO leisure consumption, Bandiera et al. (2017) and Biggerstaff, Cicero, and Puckett (2017) find a negative linear relation between leisure and firm performance.

According to Jensen and Meckling (1976), CEO leisure consumption only equals costly shirking if the total dollar cost of leisure outweighs the total dollar value of leisure benefits. Hence, whether leisure consumption equals shirking depends on how CEOs spend how much time outside their office. Against this background, our study addresses the question whether leisure consumption by CEOs is purely managerial shirking. We are the first to provide evidence that leisure consumption does not generally reflect costly shirking. In fact, our results suggest that CEOs who spend time to maintain their physical fitness consume leisure efficiently and in the interest of shareholders, consistent with positive net benefits of CEO leisure.

Leisure-time fitness activities can benefit CEOs, and ultimately shareholders, as they moderate stress (e.g., Gal and Lazarus (1975), Brown (1991)) and promote cognitive functions and executive-control processes as well as work behavior and performance (e.g., Folkins and Sime (1981), Kramer et al. (1999), Colcombe and Kramer (2003), Rhea, Alvar, and Gray (2004), Coe et al. (2006)). Thus, CEOs who consume leisure to invest in their fitness can be expected to better stand their high work stress, be less exhausted and more disciplined, and to perform better. Nevertheless, CEOs' leisure-time fitness activities also have costs, particularly the risk of injuries and the opportunity costs of time spent outside the office. Given that CEOs spend an average 54 hours a week at work (Bandiera et al. (2017)), the latter may not be as costly as one might expect, i.e., CEOs may consume leisure and supply sufficient labor.

Consistent with the aforementioned benefits of fitness, an increasing number of CEOs spend leisure time to invest in their physical conditions, particularly via endurance sports like running. This trend is in line with statements by executive recruiting firms and insights from the literature (Lovelace, Manz, and Alves (2007), Neck et al. (2000)) that highlight the importance of physical fitness for CEOs given the increasingly high levels of demands and responsibilities they have to cope with (Hambrick, Finkelstein, and Mooney (2005)).[1]

Given the prolonged trend for endurance sports among CEOs, we measure CEO leisure consumption primarily by marathon participations. While measuring CEO leisure and its effects is difficult as firms do not have to disclose how CEOs allocate their time, marathon running is a reasonable measure for several reasons. First, CEO marathon participations reflect considerable investments in physical fitness as preparing for a marathon is time-consuming. That is, CEOs who finish a marathon most likely have consumed significant leisure time to invest in their physical conditions. In this regard, the most common reason to start running is to improve fitness (Summers et al. (1982)). Second, running arguably is a clear measure of leisure consumption and fitness activity, in contrast to other popular CEO sports like golfing, which allows CEOs to do business while being on the golf course and to enter valuable networks. Third, running is a primary sport among CEOs (who have high flexibility needs), given that it can be done at virtually any place and any time, and without any teammates.

To identify CEOs who are marathon finishers, we use data for all finishers of all U.S. marathons between 2001 and 2011, available on the largest U.S. internet marathon directory. We define CEOs as consumers of leisure-time physical activity when they finish a marathon in

[1] *The Wall Street Journal (WSJ)* reports that an increasing number of CEOs and other executives run marathons. It states that "[…] for many CEOs, a motivation to keep running is that it leads to business success […]" (see „Executive endurance" from October 04, 2007). CEO marathon runners include Robert Iger (Walt Disney), Klaus Kleinfeld (formerly Alcoa), John Legere (T-Mobile), and Mark Parker (Nike). The *WSJ* further states that: "[…] leadership experts and executive recruiters say that staying trim is now virtually required for anyone on the track for the corner office. Because the demands of leadership can be quite strenuous, the physical aspects are just as important as everything else […]" (see „Want to Be CEO? What's Your BMI?" from January 16, 2013).

a given year. We alternatively define CEOs as leisure consumers in the year they finish a marathon and the year before to capture that running a marathon necessitates considerable preparation in advance and that leisure-time training prior to marathons increases physical fitness early on. Consistent with the trend for running among CEOs and all over the U.S., we document a strong increase (CAGR of 9%) in the number of marathons over our sample period and an increasing number of CEOs in our sample who finish marathons.

To study whether leisure consumption purely reflects managerial shirking or whether it may also have positive net benefits for CEOs and shareholders, we examine its relation with firm value. Given the impact of CEOs on the firms they run (e.g., Bertrand and Schoar (2003), Adams, Almeida, and Ferreira (2005), Bennedsen, Peréz-González, and Wolfenzon (2017)), we expect CEO leisure consumption to impact firm value. In particular, we expect positive (negative) net benefits of leisure-time activities to be reflected in a higher (lower) firm value.

Using a panel of more than 12,500 firm-year observations of S&P 1500 companies, we find that CEO leisure consumption, measured by CEO marathon participations, is associated with significantly higher firm value. This result is found on both univariate and multivariate level and does not hinge on our definition of CEO leisure. Our analyses account for numerous time-varying CEO, governance and firm characteristics as well as for unobserved time-invariant heterogeneity via either CEO(-firm), firm or industry fixed effects. The fixed effects take into account that CEOs' leisure-time activities and firm value might correlate with industry characteristics and unobserved CEO- or firm-specific factors such as CEOs' innate talent and military experience or firms' culture and employee fitness programs. The evidence is consistent with the view that CEO leisure consumption does not generally reflect costly shirking.

To complement our panel regressions and to further mitigate concerns of unobserved heterogeneity, we examine the stock market reaction around CEOs' marathon participations in an event study. Given that the CEOs in our sample do not run marathons each year and given

that investors cannot observe if and how much CEOs exercise, CEOs' marathon participations can be expected to surprise the market. Supporting our panel regression results, we find positive abnormal stock returns on the days around the dates of marathons finished by the CEOs in our sample. We find no abnormal returns in the quarter prior to these marathons, indicating that CEOs are not more likely to run when their firms have performed well in the short-term.

We address concerns that our results might potentially be driven by reverse causality or an unobserved time-varying factor that correlates with both CEO leisure and firm value. Although not backed by our event study results, one might argue that reverse causality matters as CEOs might be more likely to consume leisure when their firm has performed well or when they know that their firm is going to perform well. If so, firm performance explains CEO leisure, not vice versa, and CEOs might still not supply enough labor to maximize firm value even though firm value increases. Of course, CEOs may also consume leisure when they have fewer projects to evaluate and conduct, which likely correlates with poor performance.[2] We examine the determinants of CEO leisure measured by marathon participations and cannot detect any indication that CEOs are more likely to consume leisure when their firms have performed well or are likely going to perform well. Particularly, we find no relation between CEO leisure and past firm value, profitability, CEOs' stock ownership or unexercised exercisable stock options.

As a more general test to address endogeneity concerns such as reverse causality, we use an instrumental variable (IV) analysis. In line with Biggerstaff, Cicero, and Puckett (2017), we instrument CEO (outdoor) leisure consumption (measured by running) by the number of months with pleasant weather on state-year level. We find that CEOs are significantly more

[2] Anecdotal evidence suggests CEOs afford the time to work out regularly, independent of corporate performance. For example, *Fortune Magazine* reports about CEOs who work out several days a week or even every day. It cites Richard Branson, CEO of Virgin Group and a marathon finisher, who says that work out gives him four extra hours of productivity a day (see "The fittest CEOs in America?" from May 5, 2015). Furthermore, in "Marathon running – A hobby of global CEOs", Rao (2006) lists CEOs of global firms who run very frequently. The article states that "[…] running CEOs manage the challenge of time management." For example: "Greg Brenneman of Burger King trains most mornings by 4:30 a.m. with an eight-mile run".

likely to participate in marathon running if their firms are headquartered in states with more pleasant weather, which facilitates outdoor sports like running. The IV regression results suggest that CEO leisure consumption has a positive effect on firm value.

To further strengthen the causal link between CEO leisure consumption and firm value, we examine the stock market reaction around announcements of sudden CEO (and president) deaths. This approach mitigates endogeneity concerns because sudden deaths occur randomly and are likely to be exogenous to current firm and market conditions. We define CEOs as physically active leisure consumers when the related news and obituaries around the time of their deaths describe them as active sportsmen (e.g., mountaineers, skiers, tennis players). We consider all types of leisure-time physical activities because we are able to hand collect data on CEO activities for the sample of sudden deaths and as there are not enough cases of deceased runners. The broader definition of leisure allows for a more general test of the validity of our results. We find that the average abnormal stock return to announcements of sudden deaths is significantly lower for physically active CEOs. Given that these CEOs are costly to replace, this finding supports our previous results as it suggests that a CEO's contribution to firm value (net of the expected successor) is significantly higher if he or she is physically active.

In addition to the aforementioned tests, we address obvious cases of time-varying factors that might correlate with both CEO leisure consumption and firm value. First, we repeat our panel regressions excluding all CEOs aged between 40 and 54 years to address the concern that CEOs who are in their mid-life crisis or whose children have left for college invest more time in both their physical activities and their job. Second, we include additional controls for CEOs' managerial abilities and experience, busyness, and peer pressure to spend time to be physically fit. Both tests support the positive relation between CEO leisure consumption and firm value.

The evidence presented in this study is most consistent with a positive effect of CEO leisure-time physical activity on firm value, albeit we cannot rule out completely that

unobserved time-varying heterogeneity might possibly affect our results. Yet, as none of our tests provides an indication of negative effects on firm value, we conclude that CEO leisure consumption does not generally reflect costly managerial shirking. To provide further support for this conclusion, we examine whether and how professional investors consider observable CEO leisure consumption when they make investment decisions. If CEO leisure-time physical activity is in the interest of shareholders, we would expect investors to be more likely to buy the stock of firms whose CEOs are physically active. However, if it reflects costly shirking, we would expect investors to be less likely to buy the stock. In line with a positive effect of CEO leisure consumption on firm value, but inconsistent with shirking, we find that mutual funds are significantly more likely to buy firms managed by CEOs who finished a marathon.

Taken together, this study provides evidence that CEOs who consume leisure time to maintain their physical fitness are associated with a higher firm value, consistent with positive net benefits of CEO leisure. This finding implies that CEO leisure does not generally reflect shirking and that some CEO activities – possibly labeled as shirking – may help CEOs to cope with the demands and stress of their job to the benefit of shareholders. This interpretation is consistent with Rajan and Wulf (2006), who provide evidence that the use corporate resources, such as jets or chauffeur services, by CEOs does not generally reflect perk consumption, but serves to improve managerial productivity. In addition, our results also provide an explanation for the growing fitness trend among executives and a rationale for why executive recruiting firms look for physically active CEO candidates.

Our study contributes to a recently growing literature concerned with the time use and leisure activities of CEOs and their relation to corporate outcomes. It is particularly related to Bandiera et al. (2017) and Biggerstaff, Cicero, and Puckett (2017). The former document a positive linear relation between a CEO's weekly hours at work and firm performance, which implies that CEO leisure consumption in general is not in the interest of shareholders. Our

evidence complements this study as it suggests that CEO leisure consumption may not generally hurt firm performance and that the relation between CEO working hours and performance is not necessarily linear. Biggerstaff, Cicero, and Puckett (2017) examine firm performance for a sample of 363 CEOs for which golfing records are available. The authors use golf as a measure of CEO shirking and find that, compared to other CEOs who golf, those CEOs who golf the most have lower incentives to perform (e.g., stock lower ownership) and are associated with lower firm performance. We complement their study by providing evidence that leisure does not generally reflect shirking. We attribute the difference between their findings and ours to the costs and benefits of golf and endurance sports like running, which likely differ considerably. For example, endurance sports can be expected to have higher benefits stemming from physical fitness, while golf is likely to be costlier on direct monetary dimensions such as golf club memberships. In sum, Biggerstaff et al. and our study together suggest that the relevant question might not be whether or not CEOs consume leisure, but how they consume leisure.

Other related studies that also examine CEOs time use and leisure activities are Sunder, Sunder, and Zhang (2017) and Cain and McKeon (2016) who provide evidence that firms managed by CEOs who have the hobby of flying airplanes are associated with more innovation and higher risk-taking, respectively. Furthermore, Yermack (2014) uses data about corporate jet flights to CEOs' vacation homes and documents significant news disclosure and stock price patterns around CEOs' vacation trips. In contrast to our paper, these studies neither consider the costs and benefits of CEO leisure consumption, nor their relation to firm value.

The remainder of this paper is organized as follows. Section 1 describes the data and variables. Section 2 presents the main empirical results regarding the relation between CEO leisure and firm value. Section 3 presents several tests that address endogeneity concerns. Section 4 provides evidence from mutual funds' investment decisions. Conclusions follow.

1 Data

1.1 Sample and variables

Our initial sample comprises all S&P 1500 companies over the period 2001 to 2011 as covered by ISS (formerly RiskMetrics). For these firms, we collect governance data from ISS' Governance segment and director-level data from the Director segment. We match this sample with ExecuComp to obtain information on CEO characteristics, in particular CEOs' first and last names, their age and tenure as well as an annual description of CEO titles (i.e., chairman and president). Accounting data and business segment information is retrieved from Compustat. Stock price information stems from the Center for Research in Security Prices (CRSP). Our final sample consists of 12,681 firm-year observations with all available data.

To construct our marathon-based measure of CEO leisure consumption, we obtain data for all U.S. marathons covered by www.marathonguide.com, the largest marathon directory on the internet. For each marathon, we gather information for all marathon finishers. Panel A of Table 1 provides an overview of the number of U.S. marathons and distinct marathon finishers for our sample period. Reflecting the strong trend for endurance sports, the number of U.S. marathons has increased steadily over our sample period, with 237 marathons in 2001 and 560 in 2011, corresponding to a compound annual growth rate of 9%. Similarly, the number of distinct U.S. marathon finishers has increased steadily from 257,426 in 2001 to 446,176 in 2011. For each marathon finisher, we collect information about that person's first and last name, age, gender, and place of residence. Unfortunately, this information is not available for all marathons and finishers. Overall, our data gathering process generates a sample of 752 distinct marathons and 2,363,380 distinct marathon finishers.

We match our data on marathon finishers described above with our sample of CEOs using the information about the first name, last name and age of each CEO and marathon finisher. Particularly, if the first name, last name and age of the marathon finisher exactly match

the CEO's first name, last name and age, we define this match as a positive match. In case the first and last names perfectly match, but the age matching results in an age difference between the CEO and the marathon finisher of one year, we define this match as a non-final positive match. We do so because it is possible that a CEO's birthday is before or after the marathon event and, thus, our matching procedure creates an age difference greater than zero, although the match is correct. In this case, we search for the CEO's exact date of birth on the internet and check whether the age difference of one year is possible given the date the respective marathon took place. Further, if possible we manually check the resulting matches using Google and specific websites such as LexisNexis and LinkedIn.

Regarding our definition of CEO leisure consumption, we generally classify CEOs as leisure consumers when they finish a marathon, which reflects time-consuming investments in physical fitness. Our main variable of interest is *Physically active CEO*$_t$, which is an indicator variable equal to one if a CEO finished a marathon in a given year (t), i.e., the CEO very likely is or was physically active during her leisure time. For robustness purposes, we use a related marathon-based measure, *Physically active CEO*$_{t-1,t}$**.** This indicator variable equals one for year t and the previous year (t-1) if a CEO finished a marathon in year t, zero otherwise. We use this variable to take into account that many CEOs will have to practice for a considerable period of time before they run a marathon and, hence, may consume leisure already in the year before the marathon takes place. The use of this alternative variable also accounts for the fact that some marathons take place already in the first quarter of the year. We use (and define) an alternative leisure measure, not limited to running, in Section 3.

Our analyses include a large set of control variables for CEO, firm and governance characteristics. CEO characteristics include the CEO's age and tenure, her stock ownership, and three indicator variables, which equal one if the CEO is either the chairman of the board of directors (CEO duality), the only insider on the board (CEO only insider), or the firm's

president (CEO is president), respectively. Firm characteristics include book leverage, the number of business segments, cash holdings, competition (based on data from Hoberg and Phillips (2016)), capital expenditures, firm age, firm risk (i.e., the standard deviation of monthly stock returns) and firm size (i.e., ln(total assets)) as well as return on assets (ROA) and R&D expenditures. Governance characteristics include board size, the fraction of independent directors on the board, and the E-index proposed by Bebchuk, Cohen, and Ferrell (2009). Our measure for firm value is Tobin's Q. Except for firm age and risk, all firm characteristics enter the regressions with one lag. All variables are defined in Appendix A.

1.2 Summary statistics

Figure 1 depicts the annual percentage of CEOs identified as marathon finishers over the entire sample period. Consistent with the growing trend for marathon running among executives, the figure shows that the fraction of CEOs who finished at least one marathon between 2001 and 2011 has doubled over the sample period. Accordingly, Panel B of Table 1 reports that the average annual fraction of CEOs who finished at least one marathon over the sample period is 9.7%. It also reports that the number of distinct CEO marathon finishers accounts for 4.2% of all distinct CEOs in the sample. Panel C of Table 1 shows the total number of marathons finished between 2001 and 2011 per marathon finisher. Over this eleven-year period, all marathon finishers finish 3.1 marathons on average (i.e., 0.28 marathons p.a.), while the median number of finished marathons is 1. These numbers are higher for the group of CEO marathoner finishers: over the eleven years, CEOs finish 4.6 marathons (or 0.42 marathons p.a.) on average, the median is 2.5. However, the difference between CEO and non-CEO marathon finishers becomes much smaller when we only consider non-CEO marathon finishers who are in the same age group as CEOs, i.e., people who are between 40 and 75 years old (which corresponds to the 1st and 99th percentiles of CEO age). For this group of people, the mean

number of finished marathons is 4 (or 0.36 marathons p.a.) and the median is 2. Hence, in terms of finished marathons CEOs are comparable to U.S. marathoners in the same age group.

Table 2 provides summary statistics for the aforementioned control variables. In terms of CEO characteristics, we find that the average CEO is 56 years old and has been at the helm of the company for about 8 years. 58% (59%) of the CEOs are also the chairman of the board (president of the company) and 60% of the CEOs are the only insiders on the board. CEO stock ownership averages 3% (while the median is 1%). On average, the firms in our sample have a book leverage of 38%, have three business segments, have been stock-listed for 26 years, and their total assets amount to $12.3 billion (ln(assets) = 7.68), whereas the median is $1.8 billion. Firms' average cash and equivalents, capital expenditures, and R&D expenditures amount to 15%, 5%, and 3% of total assets, respectively, while their average return on assets is 14% and Tobin's Q is 1.84. Regarding governance characteristics, the firms in our sample have an average board size of nine directors, an independence ratio of 73%, and an E-index of 2.54. Overall, the sample characteristics compare well to those in recent CEO and governance studies (e.g., Cain and McKeon (2016), Custódio and Metzger (2014)).

Table 2 also presents summary statistics for firms with and without physically active CEOs. Tests for mean and median differences suggest that the two samples show a few significant disparities: physically active CEOs are younger (53 vs. 56 years), have been at the helm of the company for fewer years, more often hold the title of the company's president, more often serve as the only insider on the board of directors, and serve on boards with higher independence ratios. With respect to firm characteristics, we find that companies run by physically active CEOs are less volatile and operate in less competitive business environments. Finally, firm value – i.e., mean and median Tobin's Q – is significantly higher for physically active CEOs.

2 CEO Leisure Consumption and Firm Value

In this section, we examine the relation between CEO leisure consumption – measured by marathon participations, which reflect CEO leisure-time fitness activity – and firm value. The results provide an answer to the question whether CEO leisure consumption purely reflects managerial shirking or whether it can also have positive net benefits. Ex ante, it is not clear whether and how CEO leisure consumption used to invest in physical fitness matters as it has both benefits and costs such as stress relief and opportunity costs of time, respectively. In Section 2.1, we use panel regressions to answer the above question. In Section 2.2, we use an event study to determine abnormal stock returns around CEOs' marathon participations.

2.1 Evidence from panel regressions

In the following, we examine the relation between CEO leisure consumption and firm value using our CEO-firm panel and the variables described in Section 1. Specifically, we run regressions of *Tobin's Q* on our CEO leisure measures *Physically active CEO*$_t$ and *Physically active CEO*$_{t-1,t}$ and a large set of controls for CEO, firm and governance characteristics as well as year fixed effects. The regressions also include either CEO, firm or (Fama-French 48) industry fixed effects to account for unobserved time-invariant heterogeneity. In particular, the use of CEO fixed effects takes into account that our measure of leisure consumption might correlate with unobserved CEO characteristics that have potential impact on firm value. For example, CEO leisure-time fitness activity might correlate with CEOs' innate talent, a military or athletic background, or other valuable experience gathered before CEOs took office. Among other concerns, firm fixed effects take into account that CEO leisure-time fitness activity might capture the value of firms with employee fitness programs or other aspects of corporate culture. Lastly, industry fixed effects take into account that in some industries (e.g., cosmetics, health, sports), which have grown significantly, CEOs might be more likely to consume leisure to take care of their physical conditions. All regressions use standard errors clustered at the firm level.

The results are presented in Table 3. Panel A shows results from regressions with CEO fixed effects. The regression coefficients for both *Physically active CEO$_t$*, and *Physically active CEO$_{t-1,t}$* are positive and significant at the 5% level. That is, an increase in leisure consumption at the CEO level, as measured by a CEO's completion of a marathon, is associated with an increase in firm value at the CEO level. In unreported regressions, we repeat the two regressions from Panel A and use CEO-firm fixed effects instead of CEO fixed effects to further address concerns of endogenous CEO-firm matching. Alternatively, we exclude all firm-year observations for which CEO tenure is below three years. The regression coefficients of both leisure measures remain statistically significant. In Panel B, specifications (1) and (2) show results from firm fixed effects regressions, while specifications (3) and (4) show results from regressions with industry fixed effects. The regression coefficients for *Physically active CEO$_t$* and *Physically active CEO$_{t-1,t}$* are again positive and significant at the 5% level. Thus, overall we find a positive relation between our CEO leisure measures and firm value, which provides an indication that CEO leisure consumption does not generally reflect managerial shirking.[3]

In an additional unreported test, we restrict our sample to only those CEOs who run at least one marathon over our sample period and repeat our regressions. This matched-sample approach further addresses the concern that our measure of leisure consumption, marathon running, might capture a specific type of CEO or CEO trait. We again find a significantly positive relation between leisure consumption and firm value.

We also perform robustness tests to address concerns that our results might be driven by outliers or might just be a statistical artifact. First, we winsorize all non-binary variables in our sample at the 1st and 99th percentiles and repeat the regressions from Table 3. The results of

[3] With regard to the control variables, we find that firm and board size as well as the number of business segments and a dummy whether the CEO is the only insider on the board are negatively related to Tobin's Q, while cash holdings, profitability (ROA) and R&D are positively related. These results are in line with the existing studies examining firm value (e.g., Bebchuk, Cremers, and Peyer (2011), Custódio and Metzger (2014),Yermack (1996)).

this test are reported in Appendix B. The regression coefficient for *Physically active CEO$_t$* remains statistically significant in all regression specifications. To address outlier concerns beyond winsorizing the data, specification (4) shows the results from a median regression of *Tobin's Q* (winsorized) on *Physically active CEO$_t$*, which minimizes the sum of absolute (instead of squared) residuals. In unreported tests, we repeat regression specifications (1) to (4) using the variables *Active CEO$_{t-1,t}$* and find qualitatively similar results. Second, we perform permutation tests in which we assign each CEO a random pseudo leisure consumer status. We use 5,000 random draws, i.e., we repeat the random procedure of assigning a pseudo leisure consumer status to CEOs 5,000 times, and reestimate our baseline regression from Table 3 for each random draw. We apply the described procedure (for all three types of fixed effects regressions) using our main variable of interest *Physically active CEO$_t$*. The results are shown in Appendix C. We show the coefficient for *Physically active CEO$_t$* and the corresponding p-value resulting from the permutation test. The p-value is calculated as the fraction of randomly permutated datasets that yield a regression coefficient larger than or equal to the coefficient for *Physically active CEO$_t$* reported in Table 3 relative to the total number of 5,000 permutations. The null hypothesis that there is no effect of the variable *Physically active CEO$_t$* can be rejected given the p-values of 0.0004, 0.0052 and 0.0002. This result suggests that our main finding is reliable and unlikely to be a statistical artifact.

2.2 Complementary event study evidence

As a complementary test whether and how CEO leisure consumption matters, we examine the stock market reaction around CEO marathon participations. Given that the median CEO runs 2.5 marathons over the eleven-year period from 2001-2011 and given that investors typically cannot observe if and how much a CEO is exercising, CEO marathon participation can be expected to surprise the market.[4] Hence, to examine how the stock market reacts to CEOs

[4] Consistent with this assumption, the results in Table 5 show that the vast majority of observable CEO, firm and governance variables do not explain CEO marathon participation, indicating that it is difficult to predict.

running a marathon, we conduct an event study around the dates of marathons finished by the CEOs in our sample. In case a CEO finishes more than one marathon in a given year, we only consider the first marathon he or she finishes in that year. Overall, we have 224 events.

In virtually all cases, the actual event date (i.e., the date of the marathon) is on a weekend and we define the event date as the next trading day. We consider four different event windows: [-1,1], i.e., the event date and the two trading days symmetrically surrounding it, [-2,1], [-4,1] and [-60,-5]. We consider the stock market reaction some days before the event date to take into account that some CEOs might announce their marathon participation briefly before the marathon takes place.[5] We further consider the [-60,-5] event window to provide evidence whether the average firm managed by a physically active CEO exhibits significantly good or bad stock market performance in the quarter prior to the marathon event. If so, that might provide an indication that CEOs consume (more) leisure if their firm performs well. To determine expected and abnormal returns, we use three different models: the constant mean return model, the capital asset pricing model (CAPM), and the Carhart (1997) four-factor model. To calculate expected returns, we use an estimation window of 200 trading days starting 221 trading days before the event date. For the [-60,-5] event window, we use an estimation window of 160 trading days starting 221 trading days before the event date.

According to the results from Section 2.1, we expect the average stock market reaction to CEO marathon participations to be positive. The event study results, shown in Table 4, support this expectation. We find significantly positive average cumulative abnormal returns for the three event windows [-1,1], [-2,1] and [-4,1], independent of whether we use the constant mean return model (Panel A), the CAPM (Panel B) or the four-factor model (Panel C). The

[5] We cannot rule out in general that the stock market might get the information that a CEO will run a marathon in advance of the event. However, on the one hand, if the stock market is informed prematurely, we are unable to detect a significant stock market reaction to CEO marathon participations. On the other hand, given that CEOs' schedules are subject to frequent changes and unexpected shocks or market developments, most CEOs can be expected to be careful with announcing their marathon participations too early.

average abnormal stock return for the [-4,1] event window amounts to about 1%. In contrast, we find no abnormal stock returns in the quarter prior to marathon events. Thus, the event study evidence suggests that CEO leisure consumption has positive firm value implications and matters to the stock market, which supports our panel regression results. However, we find no indication that CEOs consume leisure to run marathons because their firms exhibit significantly good or bad stock market performance in the quarter prior to the marathon event.

3 Endogeneity

Although the fixed effects panel regressions and the event study approach mitigate endogeneity problems considerably, at least two concerns remain. One concern is reverse causality. Specifically, our results might be driven by CEOs who can afford the time to consume leisure when their firm has performed well or when they know that their firm is going to perform well. In this case, firm performance explains CEO leisure consumption, not vice versa, and CEOs might still not supply enough labor to maximize firm value even though firm value increases. Although our event study results provide no indication that CEOs consume leisure when their firms perform well, they only address the correlation between short-term performance and leisure consumption by CEOs. The other concern is that unobserved time-varying heterogeneity, particularly with respect to CEOs, causes us to find a positive relation between CEO leisure consumption and firm value. We address these concerns in the following.

3.1 Determinants of CEO leisure consumption

In this section, we attempt to address the concern of reverse causality by analyzing the determinants (i.e., multivariate correlations) of CEO leisure consumption. We regress *Physically active CEO*$_t$, i.e., the CEO's decision to run a marathon in a given year, on the CEO, firm and governance characteristics presented in Section 1. The regression results are shown in Table 5. All regressions control for year fixed effects. Specification (1) also includes (Fama-French 48) industry fixed effects, while specifications (2) to (4) include firm fixed effects.

Specifications (1) and (2) use the basic control variables, specifications (3) and (4) include additional controls. Standard errors are clustered at the firm level.

To examine whether CEOs are more likely to consume leisure (to run marathons) when their firms have performed well or are going to perform well, we include additional variables related to firm performance or CEOs' inside knowledge of superior future firm performance. Specifically, given its predictive power for future firm performance, in specification (3) we additionally include past firm performance, i.e., *Tobin's Q lagged*, to examine whether CEOs indeed more likely run a marathon when their firm has performed well. If so, we expect past performance to have a positive effect on *Physically active CEO*$_t$. A similar reasoning applies to the variable *ROA*, which is included in all regressions. As a measure of CEOs' inside knowledge of future firm performance, we include the variable *Unexercised exercisable CEO stock options lagged*, which is the number of unexercised but exercisable stock options from ExecuComp, in specification (4). Given that CEOs have incentives to not exercise their exercisable stock options when they expect firm value to increase in the future, this variable captures CEOs' knowledge of superior future performance. If CEOs are more likely to consume leisure when they know their firm is going to perform well soon, we expect the aforementioned variable to have a positive effect on *Physically active CEO*$_t$. We also control for CEOs' stock ownership in the previous year (*CEO stock ownership lagged*) as we expect CEOs who own a larger fraction of their firm's stock to be more likely to consume leisure when they know the firm is going to perform well, i.e., the value of their equity stake is going to rise.

The results provide no indication of reverse causality. Neither the regression coefficients for *Tobin's Q lagged* or *ROA*, nor the coefficients for *Unexercised exercisable CEO stock options lagged* or *CEO stock ownership (lagged)* are statistically significant. In unreported regressions, we find that the number of unexercised exercisable CEO stock options in the current instead of the past year as well as the value of the unexercised exercisable CEO stock

options do not explain CEO leisure consumption. These results do not change when we use CEO fixed effects. Throughout all regression specifications, we find that older CEOs are significantly less likely to consume leisure to run marathons, consistent with the decline in physical ability and activity over age. Neither specific industries, nor any other variables consistently explain CEO leisure consumption.

3.2 Instrumental variable analysis

To further address endogeneity concerns like reverse causality and to strengthen the causal link between CEO leisure consumption and firm value, we use an instrumental variable (IV) analysis. Because our main measure of leisure consumption, *Physically active CEO$_t$*, is a binary variable, we follow Adams, Almeida, and Ferreira (2009) and use a three-stage IV approach. That means, we first estimate a binary response model (a logistic regression) in which we regress *Physically active CEO$_t$* on an instrumental variable and the controls used in Table 3. The second and third stage consist of performing the basic 2SLS approach in which the fitted values for *Physically active CEO$_t$* from the binary response model are used as instruments.

This approach has several advantages (see Adams, Almeida, and Ferreira (2009)). First, it takes the binary nature of the endogenous variable (to be instrumented) into account. Second, it does not require the binary response (first-stage) model to be correctly specified, which is advantageous as there is no established regression model to predict a CEO leisure consumption. Third, the standard errors of the basic 2SLS IV approach remain asymptotically valid.

In line with Biggerstaff, Cicero, and Puckett (2017), we use pleasant weather as an instrument for CEO outdoor leisure consumption. In particular, we use the number of months with pleasant weather – defined as months with an average temperature between 50 and 90 degrees Fahrenheit – per U.S. state and year to instrument *Physically active CEO$_t$*. We collect the number of pleasant months on state-year level from the National Oceanic and Atmospheric Administration (NOAA). To be a valid instrument, the variable *Pleasant months* must be

uncorrelated with firm value (the exclusion restriction) and must have explanatory power for CEO leisure consumption (the relevance criteria). Regarding the exclusion restriction, the monthly temperature in a U.S. state unlikely affects the discounted cash flows, i.e., the value, of internationally operating S&P 1500 firms. Regarding the relevance criteria, we expect CEOs to be more likely to participate in outdoor sports like running if their firms are headquartered in states with more pleasant weather, which facilitates outdoor activities.

The IV regression results are shown in Table 6. Because differences across U.S. states could potentially relate to firm value, all regressions additionally include state fixed effects. Specification (1) shows the results from the first-stage regression with the dependent variable *Physically active CEO$_t$*. Supporting the relevance criteria, we find a positive regression coefficient for *Pleasant months*, significant at the 5% level, which indicates that CEOs are more likely to consume leisure (in the form of running) if their firms are headquartered in U.S. states with more pleasant weather. In unreported regressions, we find similar results when we use a probit instead of a logit regression in the first stage. Specification (2) shows the result from the subsequent 2SLS regression in which *Tobin's Q* is regressed on *Physically active CEO$_t$ (IV)*, i.e., the predicted level of CEO leisure consumption. Supporting our previous results, we find a positive regression coefficient for *Physically active CEO$_t$ (IV)*, significant at the 1% level.[6] This finding indicates that CEO leisure consumption has a positive effect on firm value, consistent with positive net benefits of leisure consumption used to invest in physical fitness.

3.3 Sudden deaths

As another test to further strengthen the causal link between CEO leisure consumption and firm value, we examine the stock market reaction to announcements of sudden, unexpected

[6] A reason why IV estimates are larger than those from OLS is that *Active CEO$_t$* measures CEO leisure consumption with error and therefore OLS estimates can be biased towards zero due to attenuation bias. Another reason is that the fitted values, i.e., *Active CEO$_t$ (IV)*, have less variation than the observed values, i.e., *Active CEO$_t$* . We note that several studies find IV estimates to be larger than OLS estimates for the aforementioned reasons, e.g., Biggerstaff, Cicero, and Puckett (2017) and Custódio, Ferreira, and Matos (2017).

deaths of CEOs and presidents (i.e., designated CEOs). As sudden deaths occur randomly and are likely to be exogenous to current firm and market conditions, this approach mitigates endogeneity concerns, particularly reverse causality. To constitute a valid test, CEOs who are physically active have to be difficult/costly to replace, which is consistent with the limited number of CEOs that can be identified as being active and the time-consuming investments CEOs have to make to be physically fit. Under this assumption, the stock market reaction to a sudden death reflects the expected future contribution to shareholder value of the deceased CEO net of its expected successor.

To identify sudden deaths, we follow Nguyen and Nielsen (2014) and search the internet for keywords – such as 'CEO' and 'president' as well as 'death', 'deceased', 'died' and 'passed away' – using Edgar Online, Lexis-Nexis and Google searches. We use the period 1990 to 2012 to be able to identify enough cases. Deaths have to be described as 'sudden' or 'unexpected' or a comparable term. If we find evidence that a death was not sudden, we exclude it (e.g., if a CEO was known to suffer from cancer). We also exclude murders or suicides as they may be related to firm performance. The event date is defined as the trading day of the first public announcement of the sudden death or the first trading day following the death announcement if it occurred on a non-trading day.

As we only handle a small sample in this analysis, we are able to hand-collect information about CEOs' leisure activities that we need in order to classify the deceased as physically active or not. We use information from news around deaths, including obituaries and press releases, and additionally search the internet for information about the activities and hobbies of the deceased CEOs or presidents. To identify enough cases of deceased physically active CEOs, we do not limit our definition of leisure consumption to marathon running, but also include any other physical activities. This broader definition allows us to provide more general empirical evidence on the effects of leisure consumption (used to invest in fitness). We

define leisure consumption conservatively: consistent with our running-based leisure measure, a deceased CEO is defined as a physically active leisure time consumer, measured by the variable *CEO was physically active*, if he can be identified as physically active around the time of his death. For example, if a CEO was a sportsman at college, but cannot be identified as an active sportsman around the time of his death, he is not considered to be physically active.

Of course, the depth of information we require limits the number of sudden deaths we can use in our analysis. From the 91 cases of sudden deaths we identify and for which an abnormal stock return can be calculated, we find information that allows us to classify the deceased as physically active or not for 51 cases. For 50 cases we are able to collect control variables. The deceased CEOs (and presidents) classify as physically active leisure consumers are tennis and ice hockey players as well as aerialists, hunters, mountaineers, and skiers. These hobbies mitigate concerns of reverse causality even more as it is unlikely that CEOs start sports like hockey, skiing or tennis, which need technical practice, when their firm performs well.

We regress the abnormal stock return in the three days around the announcement of a sudden death, denoted *CAR [-1,1]*, on our leisure measure *CEO was physically active*. The variable *CAR [-1,1]* is estimated based on the market model with the CRSP index used as the market portfolio. The regression results are shown in Table 7. Specification (1) does not include any controls. Specification (2) includes controls for whether the deceased was the firm's CEO, the age of the deceased, and firm size. In specification (3), we include additional control variables for the CEO's power and importance for the firm (i.e., CEO duality, CEO tenure and Founder CEO), for the firm's market-to-book ratio (MTB) and profitability (ROA) as well as time fixed effects based on decade dummies (for the 1990s, 2000s, and 2010s). The regression coefficient for *CEO was physically active* is negative and statistically significant at the 5% level or better throughout all regressions. In unreported regressions, we use Carhart (1997) four-factor model abnormal returns and find qualitatively similar results. We further use all 91

sudden death cases and set *CEO was physically active* to zero for all CEOs for which we are unable to get information about their leisure-time activities and again find qualitatively similar results. Overall, the evidence indicates that firms lose significantly more shareholder value in reaction to announcements of sudden deaths when the deceased CEO or president was a physically active leisure consumer around the time of his death.

The above results suggest that the contribution to firm value is higher when CEOs consume leisure to be physically active, consistent with our previous results and with the conclusion that CEO leisure consumption does not generally reflect shirking. However, one might argue that sudden, unexpected deaths of CEOs who were known to be physically fit could be more unexpected and, thus, could be associated with more negative stock market reactions. If so, this analysis might overestimate the true value of CEO leisure consumption.

3.4 Unobserved time-varying heterogeneity

CEO leisure consumption and physical activity might correlate with unobservable time-varying characteristics that could have an impact on firm value. While it is impossible to address all sources of time-varying heterogeneity that could potentially drive our results, in this section we attempt to account for obvious cases to further mitigate endogeneity concerns beyond the use of our instrumental variables approach, which addresses omitted variables.

Changes in CEOs' private life may affect both their leisure consumption and firm value. In particular, CEOs who are in their mid-life crisis might generally attempt to become more successful both in their private life and in their job. These CEOs might be more likely to consume leisure to take care of their physical fitness and appearance and, at the same time, might also attempt to improve their reputation as a CEO and their firms' performance. Furthermore, when CEOs' children leave home to go to college, CEOs might spend more time on both their careers and their leisure activities. We attempt to address these two concerns by excluding from our sample all CEOs in their 40s and, alternatively, all CEOs aged 40-54 years.

Typically, people in their 40s or 40s to mid-50s are most likely to experience a mid-life crisis.[7] They are also most likely to have children who go off to college.[8] Using the restricted sample with fewer CEOs, we repeat the regressions from Table 3 for our main measure of CEO leisure consumption *Physically active CEO*$_t$. The results are shown in Panel A of Table 8. The regression coefficient for *Physically active CEO*$_t$ remains statistically significant in all regressions. In unreported regressions, we use *Physically active CEO*$_{t-1,t}$ instead of *Physically active CEO* and find qualitatively similar results. Thus, we conclude that CEOs in their mid-life crisis or whose children go off to college are unlikely to drive our results.

Another concern related to CEOs' private life is that CEOs who get divorced may spend leisure time to improve their physical fitness. If these CEOs also exhibit better job performance CEO divorces could potentially drive our results. While we cannot address this concern directly, Wheatley, Vogl, and Murrell (1991) provide survey evidence that employee divorce has a negative impact on firm productivity, inconsistent with better post-divorce job performance.

To address other concerns of time-varying CEO and board heterogeneity, we repeat the regressions shown in Table 3 for our leisure consumption measure, *Physically active CEO*$_t$, and include additional controls to capture CEO and board characteristics that vary over time and might correlate with both CEO leisure consumption and firm value. The regression results are shown in Panel B of Table 8. First, CEOs' work experience and abilities can increase over time as CEOs learn and gather more/new job experience. More experienced and able CEOs might perform better and, at the same time, might find the time to consume leisure and invest in their physical fitness. We use the general ability index by Custódio, Ferreira, and Matos (2013) and Custódio, Ferreira, and Matos (2017) to control for time-varying CEO work experience and

[7] Blanchflower and Oswald (2008) and Blanchflower and Oswald (2017) provide evidence that the average life satisfaction of U.S.-Americans declines over their 40s but reverts no later than in their early- to mid-50s.
[8] Typically, children go to college when they are about 18 years old. Thus, we assume that most CEOs became parents when they were between 22 and 36 years old. The National Center for Health Statistics reports a mean age at first birth for men of 25 years (https://www.cdc.gov/nchs/nsfg/key_statistics/b.htm#agefathers).

ability. The data (provided by the authors) is only available until the year 2007. Second, CEOs who are busy in their work life might be associated with lower firm value and might consume less leisure. To control for CEOs' busyness, we use an indicator variable *Busy CEO*, which equals one if a CEO holds three or more board seats, in line with Fich and Shivdasani (2006). Third, CEOs who are part of older boards of directors might be less likely to care about their physical activity and appearance as their peers are less likely to do so (i.e., less peer pressure). At the same time, as boards get older, their performance may decline and firm value may follow. To take this effect into account, we control for the variable *Board age*, defined as the average age of the board of directors. Controlling for the aforementioned additional variables, the regression coefficient for *Physically active CEO*$_t$ remains significant throughout all regressions. In unreported regressions, we again use *Physically active CEO*$_{t-1,t}$ instead of *Physically active CEO* and find qualitatively similar results.

4 Additional Evidence from Mutual Funds' Investment Decisions

Although our evidence is most consistent with a positive effect of CEO leisure consumption on firm value, we are not able to rule out completely that unobserved time-varying heterogeneity or another endogeneity concern might possibly drive our results. To provide further support for our conclusion that CEO leisure consumption does not generally reflect managerial shirking, we examine whether and how professional investors consider CEO leisure consumption when they make investment decisions. If CEO leisure consumption generally reflects costly managerial shirking, we would expect investors to be less likely to buy the stock of firms whose CEOs are active leisure consumers. However, if CEO leisure is in the interest of shareholders, we would expect investors to be more likely to buy the stock. To test these predictions, we examine the investment decisions of U.S. mutual funds.

To study mutual funds' investment decisions, we construct a sample of U.S. mutual funds and their stock holdings for our sample period 2001-2011. Our sample of mutual funds

is based on the universe of actively managed U.S. domestic funds covered by the Center for Research in Security Prices (CSRP) Survivorship-Bias Free Mutual Fund Database. As we focus on U.S. equity funds, we exclude all bond funds, international funds, and index funds from our sample. We gather information on mutual funds' total net assets, flows, expense ratios, and investment objectives from the CRSP database. We use the Lipper objective code to define a fund's investment objective. Some of the fund segments defined by Lipper are very small. Thus, we aggregate the smaller Lipper segments into seven broad categories: Aggressive Growth, Growth and Income, Income, Growth, Sector Funds, Utility Funds, and Mid-Cap Funds. Furthermore, many funds offer multiple share classes, which are listed as separate entries in the CRSP database. As these share classes are backed up by the same portfolio, we aggregate all share classes at the fund level to avoid multiple counting. To determine the portfolio of stocks held by the CRSP funds, we add quarterly mutual fund holdings data from the Thomson Financial Mutual Fund Holdings Database using the MFLINKS tables. We supplement the holdings information with individual stock prices, trading volume, and other stock characteristics from the CRSP U.S. Monthly Stock database. Our final sample consists of 2,915 distinct mutual funds.

To analyze whether observable CEO leisure consumption has an impact on mutual funds' investment decisions, we run regressions of mutual funds' buy decisions on the indicator variable *Physically active* CEO_{t-1}, which equals one if a CEO finished a marathon in the previous year. The dependent variable *Buy* is an indicator variable, which is equal to one if a fund has increased the number of shares of a stock at the end of the first quarter of a given year compared to the end of the previous quarter. We use a conservative approach and focus on the change in mutual fund holdings between Q4 of the previous year and Q1 of the current year for two reasons. First, almost 50% of the largest U.S. marathons take place in Q4. Second, we do not know exactly when information about marathon finishers is published on the internet so

that investors can use it. However, for the previous calendar year, this information is available no later than at the beginning of January.

Our regression results are shown in Table 9. We use four different OLS regression specifications. In specification (1), we control for time, (four-digit SIC code) industry, and fund objective fixed effects. In specifications (2) and (3), we include additional variables to control for stock and fund characteristics. At the stock level, we control for the past return, firm size, trading volume, and the book-to-market ratio. At the fund level, we include additional variables to control for fund size, fund turnover ratio, and fund flows. All these variables refer to the previous year. They are defined in the caption to Table 9. In specification (4), we additionally include fund fixed effects to control for any unobservable time-invariant heterogeneity at the fund level. All regressions use standard errors clustered at the fund level. Throughout all four specifications, the regression coefficient for *Physically active* CEO_{t-1} is positive and statistically significant at the 5% level or better.

This finding indicates that mutual funds' investment decisions indeed incorporate information about CEOs' leisure consumption and that funds are more likely to buy stocks of firms whose CEOs are physically active compared to stocks of firms managed by CEOs who are not. Hence, we conclude that CEO leisure consumption does not generally reflect shirking.

5 Conclusions

This study addresses the question whether leisure consumption by CEOs is purely managerial shirking at the detriment of corporate shareholders. Our results contradict the widespread view that CEO leisure generally reflects costly shirking, which recently has been reinforced by the literature. We provide robust evidence that CEOs who consume leisure to invest in their physical conditions act in the interest of shareholders, and consistent with positive net benefits of leisure. We primarily measure CEO leisure consumption by marathon participations, which reflect time-consuming investments in physical fitness, and find a positive

effect of leisure on firm value. Consistently, our results further indicate that professional investors take observable CEO leisure activities into account when they make investment decisions and are more likely to buy stocks of firms led by physically active CEOs.

The evidence we provide in this study enhances our understanding of principal-agent relations, particularly the unresolved issue how much agents such as managers should work. It suggests that what matters to shareholders is not whether managers spend time away from their office, but how. This result implies that some managerial activities might possibly be labeled as shirking because managers are not at work, although they help managers to cope with the demands and stress of their job to the benefit of shareholders. Furthermore, the results of this study also provide an explanation for the growing fitness trend among executives and a rationale for why executive recruiting firms look for physically active CEO candidates.

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Figure 1 – Fraction of CEOs identified as marathon runners over the sample period

This figure shows the annual fraction of S&P 1500 CEOs who finish at least one marathon over the sample period 2001 to 2011.

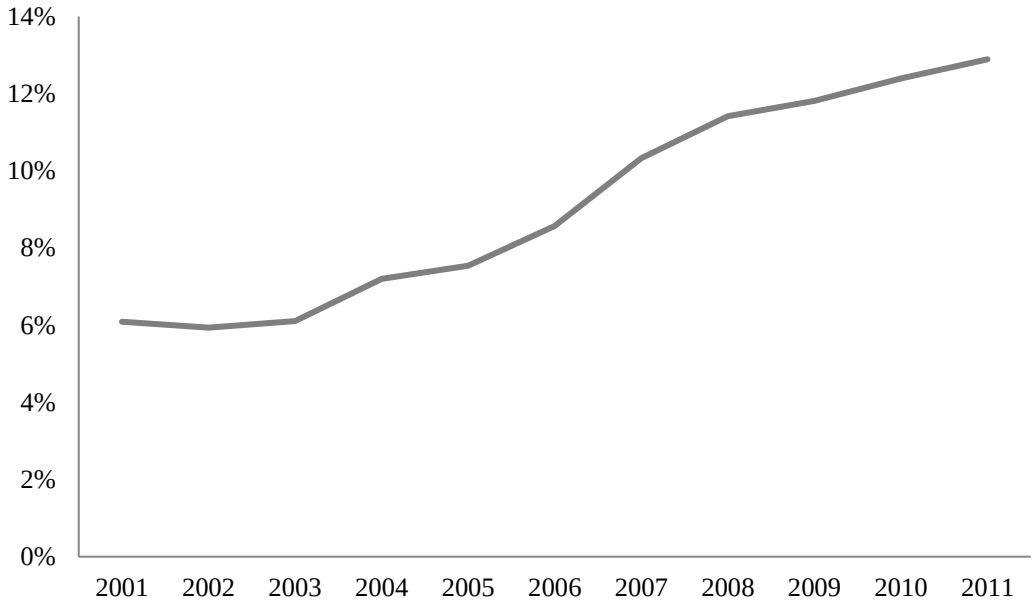

Table 1 – Summary statistics for U.S. marathons and CEO marathon finishers

This table presents a summary of CEO Fitness. Panel A shows the number of distinct U.S. marathons and the number of distinct marathon finishers for each year over the sample period 2001 to 2011. Panel B reports the fraction of physically active CEOs, i.e., CEO marathon finishers, relative to all CEOs. Panel C reports the total number of marathons finished between 2001 and 2011 per marathon finisher for all U.S. marathon finishers, all U.S. marathon finishers who are in the same age group as CEO marathon finishers (i.e., 40-75 years of age), and the group of CEO marathon finishers. U.S. marathon data is obtained from www.marathonguide.com.

Panel A: U.S. marathons and marathon finishers

Year	# distinct marathons	# distinct finishers
2001	237	257,426
2002	257	283,915
2003	280	292,534
2004	300	313,055
2005	324	329,924
2006	345	341,462
2007	333	344,034
2008	372	363,566
2009	398	395,430
2010	481	426,469
2011	560	446,176
Total	752	2,363,380

Panel B: Fraction of CEO marathon finishers ("physically active CEOs")

Average annual fraction of CEOs who finished at least one marathon over the sample period (to all CEOs)	9.72%
Fraction distinct CEO marathon finishers (to all CEOs)	4.19%

Panel C: Total number of marathons between 2001-2011 per finisher

	Mean	p5	Median	p95
All marathon finishers	3.13	1.00	1.00	9.00
Finishers same age group as CEOs	4.03	1.00	2.00	14.00
CEO marathon finishers	4.61	1.00	2.50	14.00

Table 2 – Sample summary statistics

This table reports summary statistics (on firm-year level) for the sample of S&P 1500 companies over the sample period 2001 to 2011. Mean and median differences for the two samples of firms with and without CEO marathon finishers (based on the variable *Physically active CEO$_t$*) are also reported. ***, **, and * denote statistical significance at the 1%-, 5%-, and 10%-level, respectively, for the difference in means and medians between the two samples (based on t-tests and Mann-Whitney-Wilcoxon rank-sum tests). All variables are defined in Appendix A.

							Mean				Median			
	Mean	p25	p50	p75	Std Dev	N	Physically active CEO=1	Physically active CEO=0	Difference		Physically active CEO=1	Physically Active CEO=0	Difference	
CEO characteristics:														
CEO age	55.74	51.00	56.00	60.00	7.22	12,681	52.63	55.79	-3.16	***	53.00	56.00	-3.00	***
CEO duality	0.58				0.49	12,681	0.54	0.58	0.58					
CEO is president	0.59				0.49	12,681	0.68	0.59	0.09	***				
CEO only insider	0.60				0.49	12,681	0.69	0.60	0.09	**				
CEO stock ownership	0.03	0.00	0.01	0.02	0.07	12,681	0.02	0.03	0.00		0.01	0.01	0.00	
CEO tenure	8.43	2.00	5.00	10.00	13.59	12,681	5.52	8.48	-2.96	***	4.00	5.00	-1.00	***
Firm characteristics:														
Book leverage	0.38	0.25	0.39	0.51	0.18	12,681	0.38	0.38	-0.01		0.39	0.39	0.00	
Business segments	2.94	1.00	3.00	4.00	2.38	12,681	2.58	2.95	-0.36	***	3.00	3.00	0.00	
CapEx	0.05	0.02	0.03	0.06	0.05	12,681	0.05	0.05	0.00		0.03	0.03	0.00	
Cash holdings	0.15	0.03	0.09	0.22	0.17	12,681	0.14	0.15	-0.01		0.07	0.09	-0.01	
Competition	0.19	0.09	0.14	0.21	0.16	12,681	0.21	0.19	0.02	**	0.17	0.14	0.04	***
Firm age	25.86	11.00	19.00	36.00	19.44	12,681	24.34	25.88	-1.54		19.00	19.00	0.00	
Firm risk	0.37	0.24	0.33	0.45	0.22	12,681	0.35	0.37	-0.03	*	0.31	0.33	-0.02	**
Firm size	7.68	6.51	7.49	8.66	1.62	12,681	7.50	7.68	-0.18	*	7.46	7.49	-0.03	
R&D	0.03	0.00	0.00	0.03	0.05	12,681	0.03	0.03	0.00		0.00	0.00	0.00	
ROA	0.14	0.09	0.13	0.18	0.10	12,681	0.14	0.14	0.00		0.13	0.13	0.00	
Tobin´s Q	1.84	1.16	1.50	2.11	1.07	12,681	2.07	1.83	0.24	***	1.59	1.50	0.09	**
Governance characteristics:														
Boardsize	9.22	8.00	9.00	11.00	2.31	12,681	8.98	9.22	-0.24		9.00	9.00	0.00	
E-index	2.54	2.00	3.00	3.00	1.36	12,681	2.49	2.54	-0.05		2.00	3.00	-1.00	
Independence ratio	0.73	0.64	0.75	0.86	0.14	12,681	0.75	0.73	0.02	**	0.78	0.75	0.03	**

Table 3 – CEO leisure-time fitness activity and firm value

This table reports coefficients from regressions of Tobin's Q on measures of CEO leisure-time physical activity (*Physically active CEO$_t$* and *Physically active CEO$_{t-1, t}$*) and control variables. Panel A shows the results from CEO fixed effects regressions. Specifications (1) and (2) of Panel B report results from firm fixed effects regressions and specifications (3) and (4) report results from OLS regressions with industry fixed effects based on the Fama-French 48 industries classification. All regressions include a constant (not reported). All variables are defined in Appendix A. Robust t-statistics (reported in parentheses) are based on standard errors clustered by firm. ***, **, and * denote statistical significance at the 1%-, 5%-, and 10%-level, respectively.

Panel A: CEO fixed effects

Dep. variable:	Tobin's Q	
	(1)	(2)
Physically active CEO$_t$	**0.1489****	
	(2.10)	
Physically active CEO$_{t-1, t}$		**0.1976****
		(2.55)
CEO characteristics:		
CEO age	0.0010	0.0009
	(0.25)	(0.23)
CEO duality	0.0061	0.0069
	(0.20)	(0.23)
CEO is president	0.0080	0.0079
	(0.31)	(0.30)
CEO only insider	-0.0989***	-0.0993***
	(-3.76)	(-3.78)
CEO stock ownership	-0.4613*	-0.4602*
	(-1.73)	(-1.72)
CEO tenure	-0.0016	-0.0016
	(-0.76)	(-0.76)
Firm characteristics:		
Book leverage	-0.0943	-0.0969
	(-0.84)	(-0.86)
Business segments	-0.1063***	-0.1060***
	(-4.09)	(-4.08)
CapEx	-0.0775	-0.0818
	(-0.27)	(-0.29)
Cash holdings	0.8052***	0.8028***
	(5.11)	(5.11)
Competition	-0.0450	-0.0487
	(-0.72)	(-0.78)
Firm age	0.0053	0.0062
	(0.07)	(0.08)
Firm risk	0.0410	0.0430
	(0.91)	(0.96)
Firm size	-0.3213***	-0.3225***
	(-7.47)	(-7.50)
R&D	1.7674**	1.7616**
	(2.38)	(2.38)
ROA	1.2450***	1.2474***
	(5.40)	(5.42)
Governance characteristics:		
Board size	-0.1425*	-0.1423*
	(-1.95)	(-1.95)
E-index	-0.0065	-0.0063
	(-0.52)	(-0.50)
Independence ratio	0.0977	0.0982
	(0.98)	(0.98)
Year fixed effects	Yes	Yes
Obs	12,681	12,681
R^2 (within)	0.186	0.186

Table 3 continued

Panel B: Firm and industry fixed effects

Dep. variable:	Tobin's Q			
	(1)	(2)	(3)	(4)
Physically active CEO$_t$	**0.1084****		**0.2305****	
	(2.02)		**(2.23)**	
Physically active CEO$_{t-1, t}$		**0.1202****		**0.1830****
		(2.11)		**(2.00)**
Controls as in Panel A	Yes	Yes	Yes	Yes
Industry fixed effects	No	No	Yes	Yes
Firm fixed effects	Yes	Yes	No	No
Year fixed effects	Yes	Yes	Yes	Yes
Obs	12,681	12,681	12,681	12,681
R^2 / R^2 (within)	0.441	0.441	0.211	0.211

Table 4 – Abnormal stock returns around CEO marathon participations

This table reports the average cumulative abnormal return (CAR) from an event study around the dates of CEO marathon participations. Only the first marathon per CEO and year is considered. The number of events is 224. Panel A uses the constant mean return model to estimate the expected return, Panel B uses the CAPM, and Panel C uses the Carhart (1997) four-factor model. The estimation window is [-221,-21] for the event windows [-1,1], [-2,1] and [-4,1]. For the event window [-60,-5], the estimation window is [-221,-61]. Boehmer et al. test refers to the parametric test by Boehmer, Musumeci, and Poulsen (1991), which accounts for event-induced variance. Rank test refers to the nonparametric rank test by Corrado and Zivney (1992). ***, **, and * denote statistical significance at the 1%-, 5%-, and 10%-level, respectively.

Panel A: Constant mean return model

Event window	CAR	Boehmer et al. test	Rank test
[-1,1]	0.006	2.084 **	1.698 *
[-2,1]	0.009	3.055 ***	2.450 **
[-4,1]	0.012	2.409 **	2.091 **
[-60,-5]	0.002	-0.403	-0.445

Panel B: CAPM

Event window	CAR	Boehmer et al. test	Rank test
[-1,1]	0.003	1.703 *	1.569
[-2,1]	0.006	2.539 **	1.868 *
[-4,1]	0.010	2.761 ***	2.386 **
[-60,-5]	0.016	1.743 *	0.388

Panel C: 4-factor model

Event window	CAR	Boehmer et al. test	Rank test
[-1,1]	0.002	1.135	1.726 *
[-2,1]	0.005	2.042 **	2.317 **
[-4,1]	0.007	1.844 *	2.540 **
[-60,-5]	-0.008	-0.915	-0.056

Table 5 – Determinants of CEO leisure-time fitness activity

This table reports regression coefficients from OLS regressions of the dummy variable *Physically active CEO$_t$* on CEO, firm, and governance characteristics. Industry fixed effects (Fama-French 48 industries) are included in specification (1), while firm fixed effects are included in specifications (2), (3) and (4). All regression specifications include year fixed effects and a constant (not reported). All variables are defined in Appendix A. Robust t-statistics of the regression coefficients (in parentheses) are based on standard errors clustered by firm. ***, **, and * denote statistical significance at the 1%-, 5%-, and 10%-level, respectively.

Dep. variable:	Physically active CEO$_t$			
	(1)	(2)	(3)	(4)
Tobins Q lagged			0.0017	
			(1.04)	
Unexercised exercisable CEO stock options lagged				-0.0000
				(-0.04)
CEO characteristics:				
CEO age	-0.0009***	-0.0014***	-0.0014***	-0.0011**
	(-3.87)	(-3.49)	(-3.49)	(-2.35)
CEO duality	0.0017	-0.0048	-0.0050	-0.0013
	(0.48)	(-0.97)	(-0.99)	(-0.23)
CEO is president	0.0026	-0.0075**	-0.0075**	0.0303
	(0.74)	(-2.23)	(-2.24)	(1.13)
CEO only insider	0.0031	0.0058	0.0059	0.0066
	(0.93)	(1.54)	(1.57)	(1.63)
CEO stock ownership	0.0239	0.0300	0.0307	-0.0031
	(0.86)	(1.37)	(1.40)	(-0.85)
CEO stock ownership lagged				0.0043
				(0.25)
CEO tenure	-0.0002**	0.0000	0.0000	-0.0001
	(-2.49)	(0.05)	(0.08)	(-0.43)
Firm characteristics:				
Book leverage	-0.0099	0.0222	0.0235	0.0160
	(-0.97)	(1.49)	(1.56)	(0.96)
Business segments	-0.0033	-0.0001	0.0001	0.0002
	(-1.31)	(-0.02)	(0.03)	(0.06)
CapEx	0.0092	0.0200	0.0179	0.0409
	(0.30)	(0.69)	(0.62)	(1.19)
Cash holdings	-0.0210*	0.0167	0.0146	0.0120
	(-1.75)	(0.81)	(0.71)	(0.54)
Competition	0.0130	0.0120	0.0121	0.0162
	(1.06)	(0.82)	(0.83)	(1.02)
Firm age	-0.0012	-0.0036	-0.0031	0.0032
	(-0.44)	(-0.41)	(-0.35)	(0.27)
Firm risk	-0.0162**	-0.0081	-0.0091	-0.0041
	(-2.15)	(-0.99)	(-1.09)	(-0.43)
Firm size	-0.0016	0.0002	0.008	-0.0016
	(-1.04)	(0.04)	(0.20)	(-0.35)
R&D	0.0102	0.0735	0.0692	0.1471
	(0.16)	(0.43)	(0.41)	(0.73)
ROA	-0.0020	-0.0091	-0.0157	-0.0149
	(-0.13)	(-0.36)	(-0.61)	(-0.54)
Governance characteristics:				
Board size	0.0020	-0.0170	-0.0166	-0.0122
	(0.29)	(-1.26)	(-1.23)	(-0.84)
E-index	-0.0009	-0.0000	0.0000	0.0007
	(-0.63)	(-0.02)	(0.01)	(0.43)
Independence ratio	0.0080	0.0008	0.0007	-0.0011
	(0.58)	(0.06)	(0.05)	(-0.06)
Year fixed effects	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	No	No	No
Firm fixed effects	No	Yes	Yes	Yes
Obs	12,681	12,681	12,680	10,344
R^2	0.013	0.006	0.006	0.006

Table 6 – Instrumental variable (IV) regressions

This table reports coefficients from binary endogenous instrumental variable (IV) regressions. Specification (1) shows the results from the first-stage logit regression. *Pleasant months* measures the number of pleasant months per U.S. state and year. Variables that cause separation are excluded (Zorn (2005)). Specification (2) shows the (third-stage) results from a three-stage IV approach. All regressions include a constant (not reported). All other variables are defined in Appendix A. Robust t-statistics of the regression coefficients are reported in parentheses. ***, **, and * denote statistical significance at the 1%-, 5%-, and 10%-level, respectively.

Dep. Variable:	Physically active CEO_t	Tobin´s Q
	(1)	(2)
Physically active CEO_t (IV)		**1.6625*** **
		(2.84)
Instrument:		
Pleasant months	**0.3138****	
	(2.08)	
CEO characteristics:		
CEO age	-0.0581***	-0.0012
	(-5.32)	(-0.84)
CEO duality	0.2989*	0.0362*
	(1.82)	(1.80)
CEO is president	0.2558	-0.0428**
	(1.50)	(-2.38)
CEO only insider	0.0879	-0.0609***
	(0.51)	(-2.94)
CEO stock ownership	-0.2306	-0.1582
	(-0.15)	(-0.80)
CEO tenure	-0.0298***	0.0007
	(-2.74)	(0.81)
Firm characteristics:		
Book leverage	-0.6475	0.0186
	(-1.23)	(0.30)
Business segments	-0.3138***	-0.0518***
	(-2.68)	(-3.96)
CapEx	0.8911	0.1939
	(0.47)	(0.67)
Cash holdings	-1.0321	1.7045***
	(-1.45)	(18.01)
Competition	0.7298*	0.0282
	(1.87)	(0.54)
Firm age	-0.1545	-0.0266**
	(-1.32)	(-1.96)
Firm risk	-1.1460*	-0.1810***
	(-1.68)	(-3.22)
Firm size	-0.0536	-0.0119
	(-0.76)	(-1.40)
R&D	0.1684	4.7430***
	(0.06)	(13.58)
ROA	-0.2518	5.0583***
	(-0.27)	(16.31)
Governance characteristics:		
Board size	-0.0032	-0.0373
	(-0.01)	(-0.82)
E-index	-0.0149	-0.0417***
	(-0.23)	(-5.61)
Independence ratio	0.7403	-0.0387
	(1.03)	(-0.47)
Year fixed effects	Yes	Yes
Industry fixed effects	Yes	Yes
State fixed effects	Yes	Yes
Observations	10,845	10,845
Pseudo-R^2 / R^2	0.105	0.410

Table 7 – Sudden deaths and the value of physically active CEOs

This table reports coefficients from regressions of cumulative abnormal stock returns in reaction to sudden deaths of CEOs and presidents (for simplicity, both denoted as CEOs) on the variable *CEO was physically active* and other control variables. Deceased CEOs and presidents are defined as being physically active, i.e., *CEO was physically active* equals one, if they can be identified as active sportsmen around the time of the sudden death. *CAR [-1,1]* is the cumulative abnormal return (CAR) around the first announcement of a sudden death over the three-day event window, where day 0 is the event date, i.e., the first public announcement of the sudden death. CARs are estimated using the market model with the CRSP index as the market index. The number of CEOs (and presidents) identified as fit is seven. The variable *Age* measures the age of the deceased, the variable *CEO* equals one if the deceased was the CEO of the company (zero if she was the president), the variable *Duality* equals one if the deceased was also the chairman of the company (zero otherwise), the variable *Founder CEO* equals one if the deceased was the founder of the company (zero otherwise), and the variable *Tenure* measures the tenure of the deceased CEO or president. *MTB* is the market-to-book ratio and *ROA* is the return on assets based on a firm's EBITDA. The variables *CAR [-1,1]*, *MTB*, and *ROA* are winsorized at the 5th and 95th percentiles. Specification (3) includes a dummy for each decade of the sample period (i.e., 1990s, 2000s and 2010s), denoted as decade dummies. Robust t-statistics of the regression coefficients are reported in parentheses. ***, **, and * denote statistical significance at the 1%-, 5%-, and 10%-level, respectively.

Dep. variable:	CAR [-1,1]		
	(1)	(2)	(3)
CEO was physically active	**-0.0483****	**-0.0396*****	**-0.0337****
	(-2.37)	**(-3.04)**	**(-2.10)**
CEO characteristics:			
CEO		-0.0339	-0.0394
		(-1.62)	(-1.41)
CEO age		0.0023**	0.0014
		(2.52)	(1.27)
CEO duality			0.0230
			(0.97)
CEO tenure			0.0004
			(0.52)
Founder CEO			0.0059
			(0.30)
Firm characteristics:			
Firm size		0.0121***	0.0136***
		(3.49)	(2.78)
MTB			-0.0015
			(-0.52)
ROA			-0.0440
			(-0.73)
Constant	-0.0034	-0.1900***	-0.1523*
	(-0.33)	(-2.95)	(-1.81)
Decade dummies	No	No	Yes
Obs	51	50	47
R^2	0.062	0.449	0.489

Table 8 – Time-varying CEO and board heterogeneity

This table reports coefficients from median regressions of *Tobin's Q* on *Physically active CEO$_t$* and control variables. The regression model is identical to that used in Table 3. Panel A shows results from regressions of a restricted sample. The regression results in Columns (1), (2) and (3) are based on a restricted sample, which excludes all firm-years of CEOs aged between 40 and 49 years. The regression results shown in Columns (4), (5) and (6) are based on a restricted sample, which excludes all firm-years of CEOs aged between 40 and 54 years. Panel B shows results from regressions with additional time-varying control variables. The variable *General ability index* is defined as in Custódio, Ferreira, and Matos (2013). Data on the general ability of CEOs is provided on the JFE website. The indicator variable *Busy CEO* equals one of the CEO holds three or more board seats, zero otherwise. The variable *Board age* is the average age of the board of directors. All other variables are defined in Appendix A. The regressions shown in both Panel A and Panel B include CEO fixed effects (Columns 1 and 4) or firm fixed effects (Columns 2 and 5) or industry fixed effects are based on the Fama-French 48 industries classification (Columns 3 and 6). All regressions include a constant (not reported). Robust t-statistics of the regression coefficients (in parentheses) are based on standard errors clustered by firm. ***, **, and * denote statistical significance at the 1%-, 5%, and 10%-level, respectively.

Panel A: Excluding CEOs with specific age

Dep. variable:	Tobin's Q					
	w/o CEOs in their 40s			w/o CEOs aged 40-54		
	(1)	(2)	(3)	(4)	(5)	(6)
Physically active CEO$_t$	**0.2024****	**0.1885****	**0.3527*****	**0.2241****	**0.2497****	**0.1786***
	(2.47)	**(2.55)**	**(2.60)**	**(1.97)**	**(2.58)**	**(1.87)**
Controls as in Table 3	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
CEO fixed effects	Yes	No	No	Yes	No	No
Firm fixed effects	No	Yes	No	No	Yes	No
Industry fixed effects	No	No	Yes	No	No	Yes
Obs	10,342	10,342	10,342	7,259	7,259	7,259
R^2 / R^2 (within)	0.199	0.210	0.468	0.195	0.201	0.482

Panel B: Including additional time-varying CEO and board controls

Dep. variable:	Tobin's Q					
	(1)	(2)	(3)	(4)	(5)	(6)
Physically active CEO$_t$	**0.1516****	**0.2142***	**0.1101****	**0.1373***	**0.2310****	**0.3302****
	(2.13)	**(1.80)**	**(2.05)**	**(1.78)**	**(2.23)**	**(2.19)**
General ability index		-0.0244		-0.0354*		-0.0179
		(-0.59)		(-1.95)		(-0.92)
Busy CEO	0.0103	-0.0136	0.0087	0.0130	0.0093	0.0084
	(0.32)	(-0.37)	(0.34)	(0.48)	(0.29)	(0.24)
Board age	-0.0100*	-0.0154**	-0.0059	-0.0106*	-0.0014	0.0028
	(-1.91)	(-2.15)	(-1.20)	(-1.72)	(-0.30)	(0.49)
Controls as in Table 3	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
CEO fixed effects	Yes	Yes	No	No	No	No
Firm fixed effects	No	No	Yes	Yes	No	No
Industry fixed effects	No	No	No	No	Yes	Yes
Sample years	2001-2011	2001-2007	2001-2011	2001-2007	2001-2011	2001-2007
Obs	12,681	7,585	12,681	7,585	12,681	7,585
R^2 / R^2 (within)	0.186	0.116	0.211	0.127	0.441	0.452

Table 9 – Mutual fund trades

This table reports regression results of the dependent variable *Buy* on *Physically active CEO$_{t-1}$* and control variables. The variable *Buy* is an indicator variable, which equals one if a fund has increased the number of shares of a certain stock at the end of the first quarter of a given year compared to the end of the previous quarter. Specifications (1), (2) and (3) use time, industry (4-digit sic codes), and fund objective fixed effects. Specification (4) uses fund fixed effects instead of fund objective fixed effects. The variable *Stock return* measures the past return of a firm's stock, the variable *Size* is the natural logarithm of a stock's past market capitalization, *Trading volume* is the natural logarithm of one plus the stock's past trading volume divided by the stock's past market capitalization, *Book-to-market ratio* is a stock's past book-to-market ratio, *Fund size* is the natural logarithm of a fund's lagged size, *Fund turnover* is a fund's yearly portfolio turnover ratio, and *Fund flows* is a fund's past growth rate. Robust t-statistics (in parentheses) are based on standard error clustered by fund. ***, **, and * denote statistical significance at the 1%-, 5%-, and 10%-level, respectively.

Dep. variable:	Buy			
	(1)	(3)	(2)	(4)
Physically active CEO$_{t-1}$	**0.0120*** **	**0.0119*** **	**0.0108** **	**0.0096** **
	(2.81)	**(2.79)**	**(2.32)**	**(2.13)**
Stock characteristics:				
Book-to-market ratio		-0.0034	-0.0010	0.0002
		(-1.35)	(-0.37)	(0.08)
Size		-0.0019	-0.0011	-0.0020
		(-0.86)	(-0.51)	(-1.22)
Stock return		0.0139***	0.0117***	0.0094***
		(4.48)	(3.46)	(2.84)
Trading volume		0.0124***	0.0123***	0.0121***
		(7.22)	(6.56)	(8.09)
Fund characteristics:				
Fund flows			0.0003***	0.0002***
			(4.45)	(2.95)
Fund size			0.0016	-0.0095**
			(0.97)	(-2.35)
Fund turnover			0.0229***	0.0125***
			(5.24)	(3.41)
Time fixed effects	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes
Fund objective fixed effects	Yes	Yes	Yes	No
Fund fixed effects	No	No	No	Yes
Obs	940,056	935,457	805,497	805,497
Adj. R^2	0.004	0.004	0.006	0.071

APPENDICES

Appendix A – Variable definitions

Accounting data is from Compustat. CEO data is from ExecuComp. Governance data is from ISS.

Variable	Definition
Board size	Natural logarithm of the number of directors on the firm's board of directors.
Book leverage	(Long-term debt + current liabilities)/Total assets, all at the end of the previous fiscal year.
Business segments	Natural logarithm of the number of business segments at the end of the previous fiscal year.
Cash holdings	Cash and equivalents/Total assets, all the end of the previous fiscal year.
CapEx	Capital expenditures/Total assets, all at the end of the previous fiscal year.
CEO age	Age of the firm's CEO in years.
CEO duality	Indicator variable equal to one if the CEO is also the chairman of the board, zero otherwise.
CEO only insider	Indicator variable that equals one if the CEO is the only inside director on the board, zero otherwise.
CEO is president	Indicator variable that equals one if the CEO also holds the title of the President of the firm, zero otherwise.
CEO ownership	Percentage of shares outstanding held by the CEO.
CEO tenure	The number of years the CEO has been serving as the firm's CEO.
Competition	Herfindahl-Hirschman index based on Hoberg and Phillip's (2016) data.
E-Index	The Bebchuk, Cohen, Ferrell (2009) entrenchment index of six IRRC provisions.
Firm age	Natural logarithm of the number of years the firm has been listed in CRSP.
Firm risk	Standard deviation of monthly stock returns during the year.
Firm size	Natural logarithm of total assets at the end of the previous fiscal year.
Independence ratio	Percentage of directors on the board of directors classified as independent.
Physically active CEO_t	Indicator variable equal to one if a CEO finishes a marathon in a given year, zero otherwise. All marathons reported on www.marathonguide.com are considered.
Physically active $CEO_{t-1,t}$	Indicator variable equal to one in year t and year t-1 if a CEO finishes a marathon in year t, zero otherwise. Takes into account that CEOs practice before they run.
Pleasant months	Number of pleasant months, defined as months with an average temperature between 50 and 90 degrees Fahrenheit, per U.S. state and year.
R&D	R&D expense/Total assets, all at the end of the previous fiscal year.
ROA	Return on assets defined as EBITDA/Total assets, all the end of the previous fiscal year.
Tobin's Q	(Total assets - Book equity + Market value of equity)/Total assets.
Unexerc. exerc. CEO stock options lagged	The number of unexercised exercisable CEO stock options at the end of the previous fiscal year.

Appendix B – Winsorized sample

This table reports coefficients from regressions of Tobin's Q on *Physically active CEO$_t$* and control variables. All non-binary variables are winsorized at the 1st and 99th percentiles. The regression model is identical to that used in Table 3. Specification (4) shows the results from a median regression, which minimizes the sum of absolute residuals. Industry fixed effects are based on the Fama-French 48 industries classification. All regressions include a constant (not reported). All variables are defined in Appendix A. T-statistics are reported in parentheses. ***, **, and * denote statistical significance at the 1%-, 5%, and 10%-level, respectively.

Dep. variable:	Tobin's Q winsorized at 1st and 99th percentiles			
	(1)	(2)	(3)	(4)
				Median regression
Physically active CEO$_t$	**0.1099** **(2.06)**	**0.0781*** **(1.93)**	**0.1921**** **(2.30)**	**0.1067**** **(2.24)**
Controls as in Table	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
CEO fixed effects	Yes	No	No	No
Firm fixed effects	No	Yes	No	No
Industry fixed effects	No	No	Yes	Yes
Obs	12,681	12,681	12,681	12,681
R^2 (within) / R^2 / Pseudo R^2	0.207	0.229	0.489	0.288

Appendix C – Permutation tests: Random assignment of pseudo leisure consumption

This table reports p-values from Monte Carlo permutation tests with 5,000 random draws. The reported p-value is the fraction of randomly permutated datasets that yield a regression coefficient larger than or equal to the reported coefficient for the variable *Physically active CEO$_t$* from our regressions of Tobin's Q on *Physically active CEO$_t$* and control variables using either CEO fixed effects (Column 1), firm fixed effects (Column 2) or industry fixed effects (Column 3). All regressions also include a constant (not reported). For sake of brevity, we only report the coefficients and the p-values resulting from the permutations for *Physically active CEO$_t$*. All variables are defined in Appendix A.

Dep. variable:	Tobin's Q		
	(1)	(2)	(3)
Physically active CEO$_t$	**0.1489**	**0.1084**	**0.2305**
p-value	***[0.0004]***	***[0.0052]***	***[0.0002]***
Controls as in Table 3	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes
CEO fixed effects	Yes	No	No
Firm fixed effects	No	Yes	No
Industry fixed effects	No	No	Yes
Permutations	5,000	5,000	5,000

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