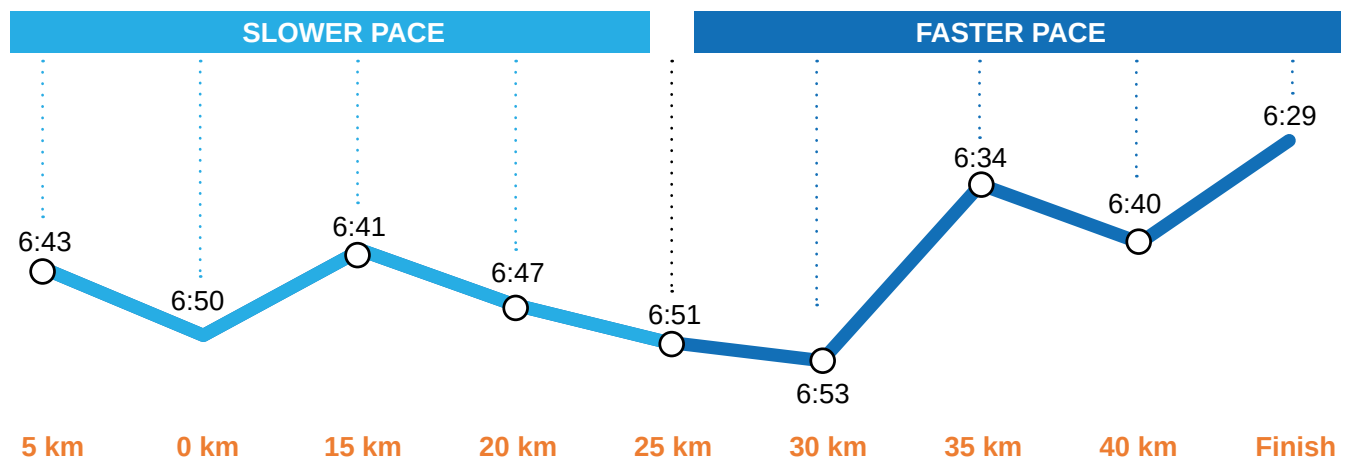


# **Perception of Effort:** An Outsized Impact on Decision-making & Behavior



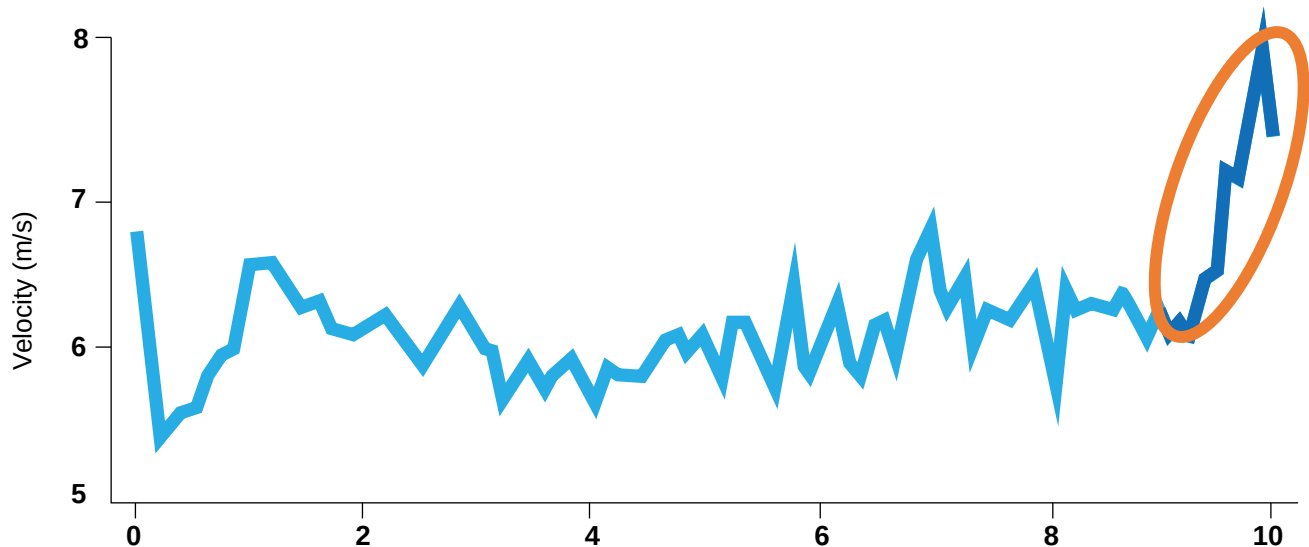
In 2019, I signed up for my first marathon—the famous NYC Marathon. The 26.2-mile course, stretching across the five boroughs and finishing in Central Park, was an incredible challenge. Yet, I crossed the finish line in 2:54 minutes, running a negative split. Running a “negative split”—where the second half of the marathon is faster than the first—defies the logic of fatigue.

### NYC MARATHON SPLITS



Typically, one would expect to slow down as energy stores deplete and muscles tire. However, this fatigue paradox is quite common. For example, in the 2008 Beijing Olympic 10K men's race, the winner surged ahead in the final kilometer, unlocking an unexpected burst of energy to win the gold medal.

### BEIJING 2008 OLYMPIC 10K MEN'S RACE



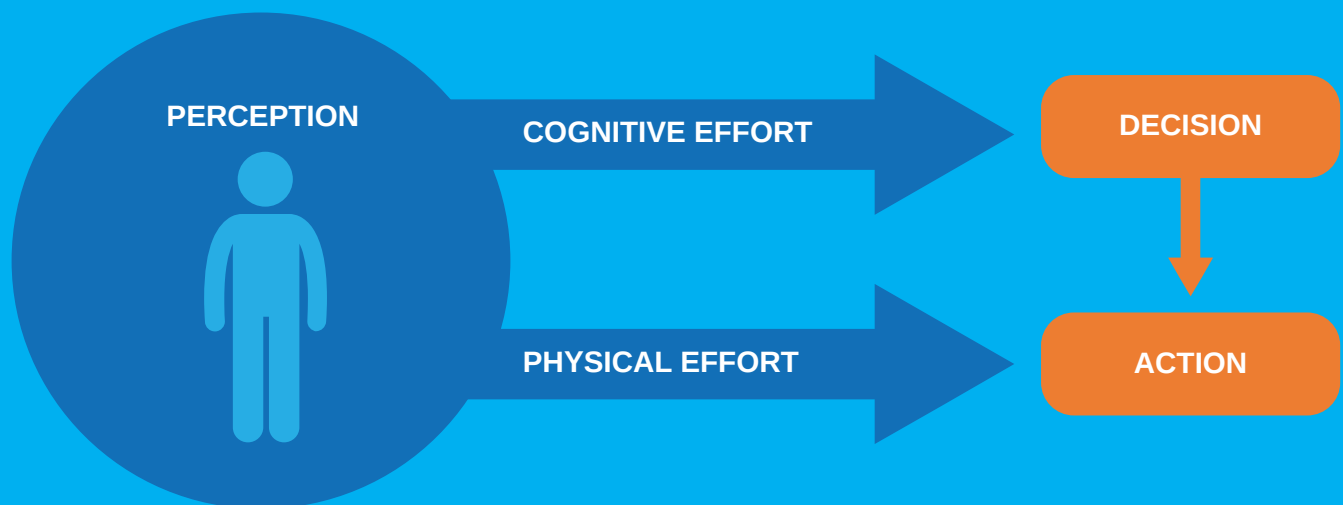
How do scientists explain athletes outperforming others under such conditions? The answer lies not in superior aerobic fitness or lesser muscle fatigue but rather in athletes' perception of effort. If the perception of effort plays an outsized impact on athletic performance, how does that translate in other domains?

# All Decision-Making is Effort-Based Decision-Making

Effort permeates all aspects of human life, significantly influencing all decisions and behaviors. Nobel laureate Daniel Kahneman describes the human tendency to conserve effort as a precious resource. While it is known that we have limited energy resources, it is less known the types of effort and how our perception of effort impacts decisions and behavior.

There are three key elements when considering the perception of effort:

1. **Perception:** Anticipatory effort estimation.
2. **Mental Effort:** Requiring cognitive processing.
3. **Physical Effort:** Requiring physical movement.



Similar to how runners pace themselves in a race, patients choose treatments based on the perceived effort required to adhere (e.g., simpler dosing schedules, easier to administer) and physician's perception of effort in prescribing treatments (easier to process information, less paperwork to Rx).

# Examples of Cognitive Effort that Impact Decisions & Behavior

Cognitive Effort	Defined	Example
<b>Effort in Learning</b>	Cognitive load associated with acquiring information, chunking it, and storing it in long-term memory.	Physician staying abreast of new clinical information about new treatments
<b>Effort in Looking:</b>	Visual attention requires cognitive resources; scanning is cognitively cheap but not free.	Lot of distractions at the clinic requiring focused attention and cognitive resources.
<b>Effort in Task-Switching</b>	Switching tasks is cognitively demanding.	Managing multiple patients needs to switch tasks frequently, such as from administering medication to updating patient records.
<b>Effort in Choosing How to Choose</b>	Different decision strategies require various trade-offs in terms of accuracy and effort.	Clinician deciding between treatment options must weigh different decision strategies, balancing accuracy and effort.
<b>Effort in Selection</b>	Deciding among options involves effort estimation	Weighing the risks and benefits, anticipating complications.
<b>Effort in Communication</b>	Conveying information clearly, particularly in complex scenarios, demands cognitive effort.	Explaining a complex procedure to a patient requires significant cognitive effort.
<b>Effort in Empathy</b>	Understanding and empathizing with others requires emotional and cognitive resources.	Thinking from a patients perspective and communicating with empathy requires mental resources.

Every decision we make involves a subjective assessment of the effort required, which shapes our choices. The subjective value of a reward declines in proportion to the effort needed to obtain it (Phillips et al., 2007).

# Conclusion

**AT THE HEART OF BIOLOGY LIES THE PRINCIPLE OF CONSERVATION OF ENERGY, AND THIS PRINCIPLE EXTENDS TO COGNITIVE AND PHYSICAL EFFORTS IN DECISION-MAKING. BY RECOGNIZING THE IMPORTANCE OF EFFORT IN IMPACTING DECISION-MAKING, WE CAN IDENTIFY PERCEPTIONS OF EFFORT AND DEVELOP EFFORT-REDUCING STRATEGIES THAT HELP PHYSICIANS AND PATIENTS MAKE MORE INFORMED AND BENEFICIAL CHOICES.**

## Citations

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