



HSAC



([HTTPS://HARVARDSPORTSANALYSIS.ORG/](https://harvardsportsanalysis.org/))

THE OFFICIAL BLOG OF THE HARVARD SPORTS ANALYSIS COLLECTIVE

OLYMPICS ([HTTPS://HARVARDSPORTSANALYSIS.ORG/TOPICS/OLYMPICS/](https://harvardsportsanalysis.org/topics/olympics/))

OTHER SPORTS ([HTTPS://HARVARDSPORTSANALYSIS.ORG/TOPICS/OTHER-SPORTS/](https://harvardsportsanalysis.org/topics/other-sports/))

BEYOND BILES: PREDICTING THE REST OF THE U.S. GYMNASTICS ROSTER

📅 JUNE 24, 2021 👤 BY HARVARDSPORTS ([HTTPS://HARVARDSPORTSANALYSIS.ORG/AUTHOR/HARVARDSPORTS/](https://harvardsportsanalysis.org/author/harvardsports/)) ⌚ 7 MIN READ

🗨️ ADD COMMENT ([HTTPS://HARVARDSPORTSANALYSIS.ORG/2021/06/BEYOND-BILES-PREDICTING-THE-REST-OF-THE-U-S-GYMNASTICS-ROSTER/#RESPOND](https://harvardsportsanalysis.org/2021/06/beyond-biles-predicting-the-rest-of-the-u-s-gymnastics-roster/#respond))

by Julia Blank

Sportico (<https://www.sportico.com/leagues/other-sports/2021/simone-biles-olympics-gymnastics-team-1234632466/>) is proud to partner with *The Harvard Sports Analysis Collective* (<https://harvardsportsanalysis.org/>), a student-run organization dedicated to the quantitative analysis of sports strategy and management.

Once every four (or five, in a pandemic) years, women's gymnastics returns to the global spotlight. And this year, with Greatest of All Time Simone Biles (<https://www.sportico.com/t/simone-biles/>) competing in her second (and likely final) Olympic Games, more eyes will be on the U.S. Gymnastics team than ever before. But beyond Biles—a virtual lock to make the team—who else should the U.S. take to Tokyo?

While you may have heard of the Magnificent Seven, who triumphed at the 1996 Games in Atlanta, or the Final Five at Rio in 2016, this year's Olympic team has a bit of a branding issue thanks to new eligibility rules. After the 2016 Games, the sport's governing body FIG announced that Olympic teams would now consist of four women for the team event, down from five. In addition to these four members, a national team can qualify additional women to compete through international performances in all competitions except for the team event. So for Tokyo, the U.S. will send four for the team event, plus two individual competitors: one chosen by committee and one, Jade Carey, who qualified individually for the Olympics through a World Cup series.

So how will those five spots be determined? The first two spots on the four-person team will be given to the top scorers all-around (a combined total of a gymnast's scores on all four apparatuses) at the Olympic Trials, which begin today in St. Louis. The remaining two will be filled by U.S. national team coordinator Tom Forrester and a selection committee with an eye toward making the team as well-rounded and strong as possible. The selection committee will also pick a fifth individual gymnast, most likely an event specialist who would give the U.S. a chance at an individual apparatus medal it might not otherwise win.

Given this basic strategy, analyzing the recent performances of the 18 women competing at Trials can give us a pretty good idea of who will be going to Tokyo next month—even though Trials haven't yet begun.

METHODOLOGY

In order to gauge each gymnast's caliber and potential contribution to an Olympic team, I examined each of the eligible gymnasts' scores in 2021. I confined my numerical analysis to competition this year, because it became clear that with COVID-19 halting competition during 2020, many gymnasts' pre-pandemic scores no longer reflected their present-day capabilities, whether due to age, injury or increased technical ability. From there, I took the mean scores for each gymnast on every apparatus (floor, uneven bars, balance beam and vault), as well as the mean of the all-around scores, choosing not to drop "outlier" scores—like when a gymnast might fall off the beam or tumble out of bounds, leading to a large deduction from her score. Since the Olympic Games represent the highest-pressure competition of them all, an outlier is just as significant a data point, serving to measure a gymnast's consistency. Under this year's rules, where every gymnast's performance counts for the team event, consistency will be more important than ever.

A CLEAR BIG THREE

Unsurprisingly, Biles appears to be a lock with an average all-around score nearly two points higher than any other gymnast in the field. In a sport where medals are decided by tenths, if not hundredths, of a point, this gap is perhaps as astounding as her tumbling itself. Undefeated since 2013, she will almost certainly win the all-around competition at the Olympic Trials.

Based on the data, the second automatic qualifying spot seems to come down to only two real contenders: Sunisa Lee and Jordan Chiles. Lee, part of the 2019 gold medal-winning World Championship team, came in second at national championships both this year and in 2019, essentially a victory given Biles' unparalleled dominance. Lee's all-around average is second highest at 57.475, anchored by a world class bar routine and consistently strong scores across all four apparatuses.

Meanwhile, Jordan Chiles, training mate of Biles, has had a remarkable 2021 season. While virtually unconsidered in past seasons, this year Chiles is averaging an all-around score of 57.15, just .3 behind Lee. Nationally, Chiles ranks in the top four on each apparatus, with an especially high vault score. Her consistency and high degree of difficulty in every recent competition position her incredibly well to make the team. If she doesn't beat out Lee for the second automatic spot at Trials, she will most certainly clinch the third spot, chosen by the committee.

With those three gymnasts so far ahead of the pack (the next highest all-around score lags Chiles by 1.965 points), the question becomes: Who should be the fourth team member?

To determine the statistically best choice, I first calculated the hypothetical total team score if only our top three competed. Using their mean event scores, the total team score would be 173.195. To pick the best fourth member, I looked to see on which events the remaining 16 competitors averaged higher scores than Biles, Lee or Chiles. If the fourth gymnast scored better than any of the other three, I used her score instead and recalculated a team total. The results show the additive power of said gymnast.

The data suggest that MyKayla Skinner, a 24-year-old gymnast and alternate for the Rio Olympic team, would be the most valuable addition. Using her mean event scores, she gets the team to a total score of 173.795, bringing an additional .600 to the overall team score. Skinner adds these points by replacing Lee on vault, where Skinner has averaged a score of 14.95 this year. Her high technical difficulty and recent displays of consistency on vault show her contributions would be clearly additive, and according to my analysis, .137 points more than the next most valuable addition, Shilese Jones. Jones would also only compete on vault in place of Lee. However, Jones' lower mean score and lack of international experience make her a less attractive choice for the team spot.

Interestingly, all but two of the competitors who can statistically make additive contributions as the fourth member compete on vault. Lee's vault, while good enough to support her in an all-around competition, is relatively low in comparison to Biles and Chiles, as the U.S. has particular depth on this apparatus. The selection committee should note this and the addition of Skinner would help take advantage of this strength in the Olympic Team competition.

FIFTH SPOT SPECIALIST

For the fifth spot, the main objective of the selection committee should be to maximize the U.S. medal count. So it should look for an event specialist who is internationally competitive at an individual apparatus. After looking at the data, I would argue that Riley McCusker is the best option. While she hasn't competed all-around since 2019, McCusker has the highest average uneven bars score in the country in 2021 with a 14.8. Her abilities on that apparatus are world class, having won gold in the uneven bars at the Pan American Games in 2019 and contributed to the 2018 gold medal-winning world championship team. Both her technical difficulty and execution scores are incredibly high on the event, rivaled only by a few in the world (including fellow American Lee).

That said, competition can be unpredictable, especially when it involves doing flips on a four-inch wide beam. But barring any huge surprises, I expect Team USA will be led by the incomparable Biles and include Lee, Chiles and Skinner, with McCusker and Carey competing in individual competitions.

Julia Blank '24 studies Government in the Data Science track and serves on the board of of HSAC. If you have any questions about the article, you can email her @juliablank@college.harvard.edu

