

Normative Data from OneStep's Gait Analysis Database



OneStep



INTRODUCTION

Our extensive and continuously growing gait analysis database allows for the calculation of normative data that provides heightened clinical insights.

OneStep's gait analysis technology allows patients to measure their gait anytime and anywhere – using only their smartphone. Each time a patient takes a walk, it is saved to OneStep's database. From this database, we can calculate normative data for each gait parameter within the general patient population. In addition, we can observe normative values within specific demographics and in groups of patients with specific gait impairments. This type of normative patient data is a particularly valuable tool for several reasons:

- Studying these patient norms tells us what ranges of parameter values are typical and can give the patients and their physical therapists insight into recovery and progress.
- OneStep's gait analysis database is a unique resource in the world of gait science, and we can find interesting and important new insights about gait and recovery that could not be detected previously.
- As OneStep's technology continues to improve and more patients join, the database grows in size and precision, enabling new and exciting studies.

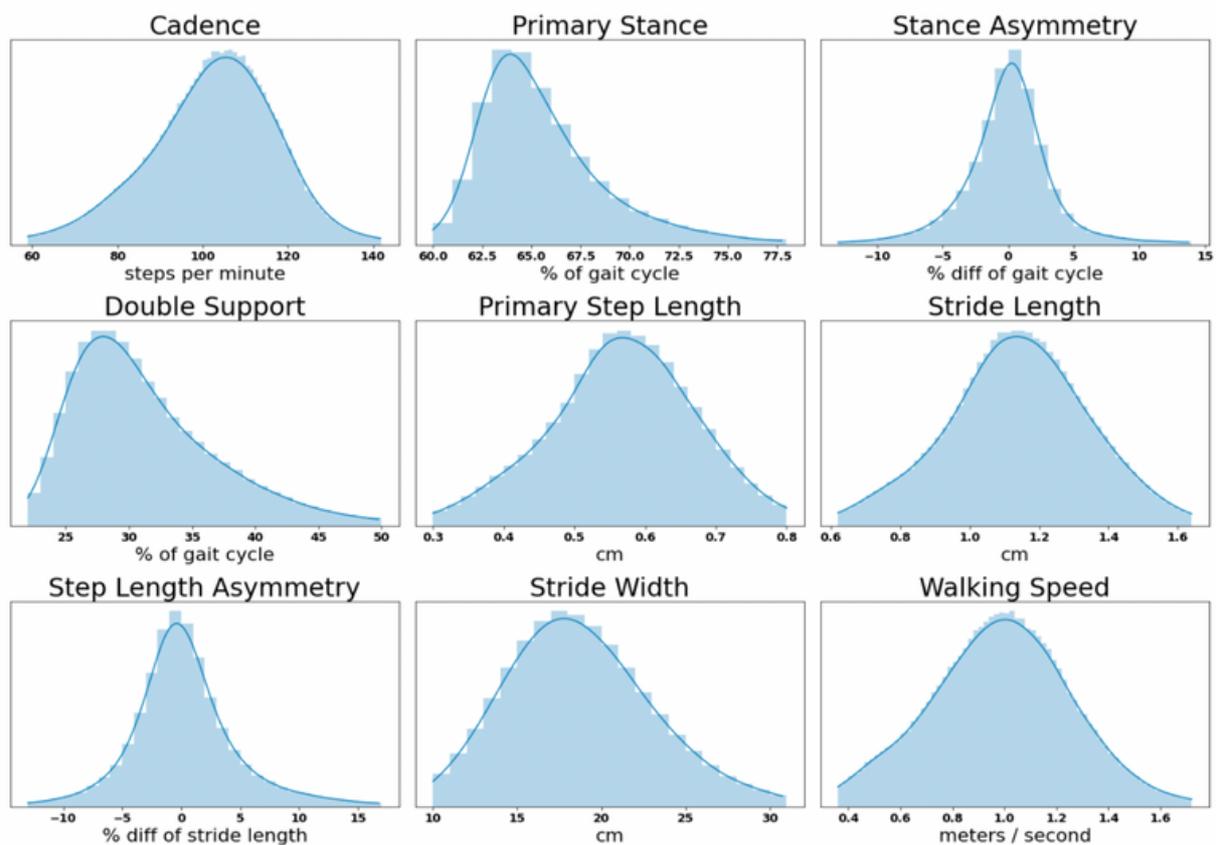


THE IMPACT

Access to such an extensive database of patient walks allows clinicians the ability to observe trends in data that provide gait parameter norms for the entire OneStep population, specific demographics, and individual patients. Additionally, unique combined views demonstrate individual norms in comparison to population and demographic norms for enhanced insight and comparison.

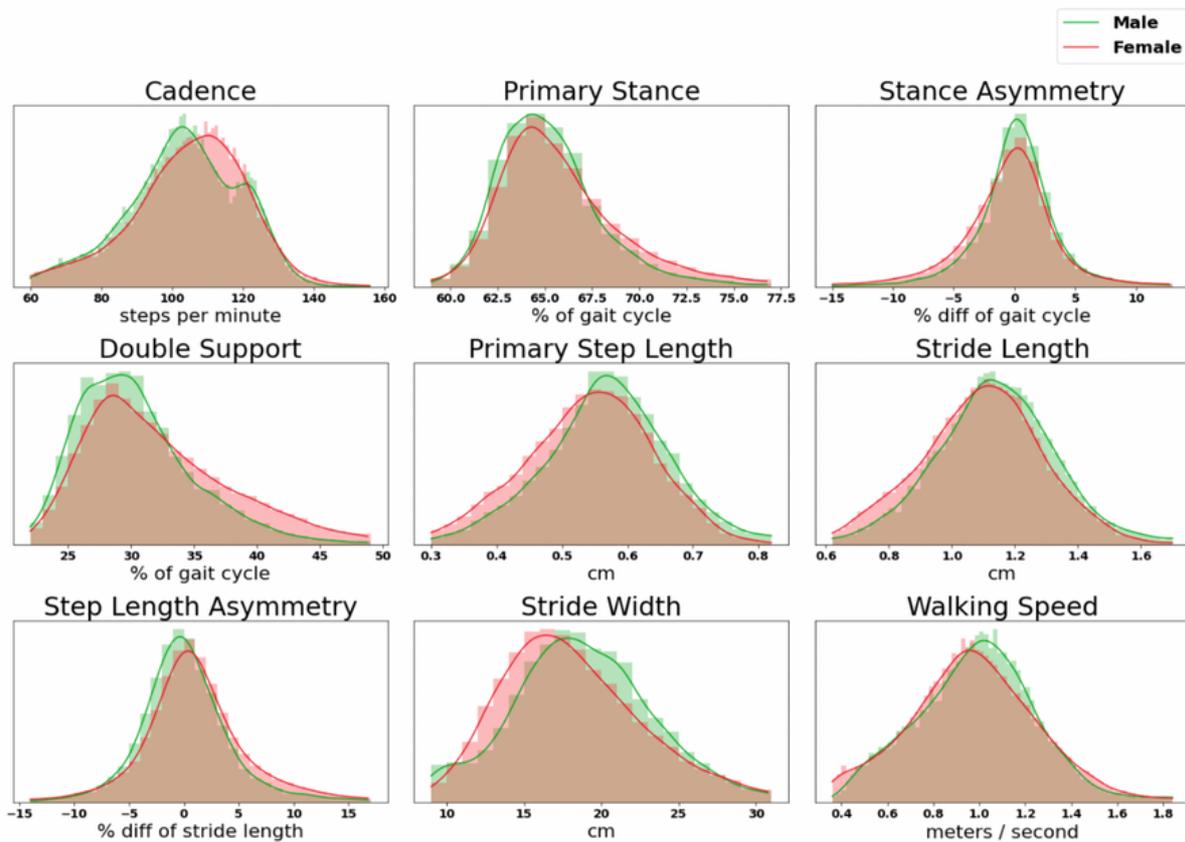
Population Norms

OneStep's database contains over 600,000 walks and 29 million steps that have been analyzed as of May 2022. These numbers continue to grow with new walks every day. From these walks, we can calculate the population norms of various gait parameters, as shown in the figure below:



Demographic Norms

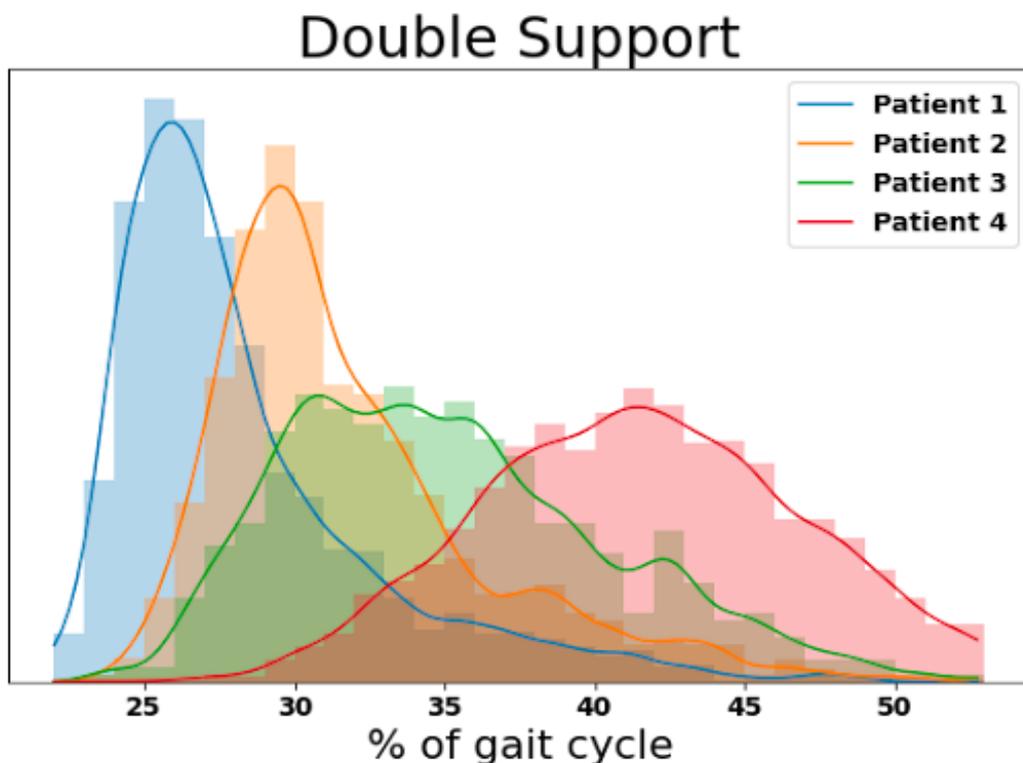
In addition to looking at gait parameter norms of the general OneStep population, norms can be generated for different demographics. With the information currently present in OneStep's database, norms can be calculated based on patient gender, age, height, weight, and more. The difference between norms in male patients and female patients is shown below:



As more patients join OneStep, and more information is added to the OneStep database, the strength of the demographic analysis will grow. With enough information, we will soon be able to look at the norms of specific combinations of demographics for each patient. For example, with more data in the future, we will be able to compare a female patient in her sixties who is 155 cm tall to all patients of the same gender, age, and height. This precise comparison will enable highly-personalized and targeted recovery goals based on real data from other similar patients.

Individual Norms

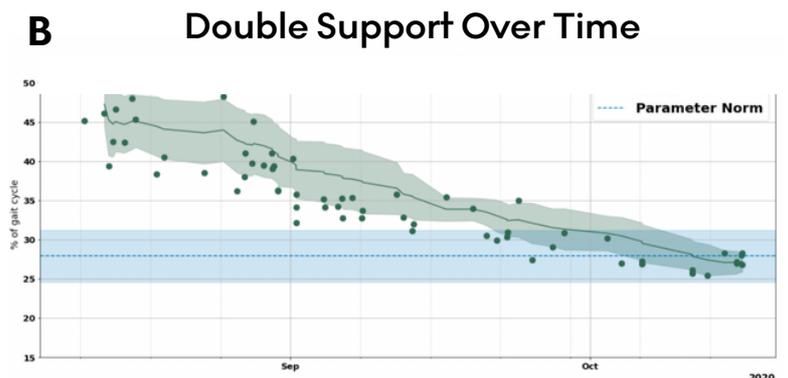
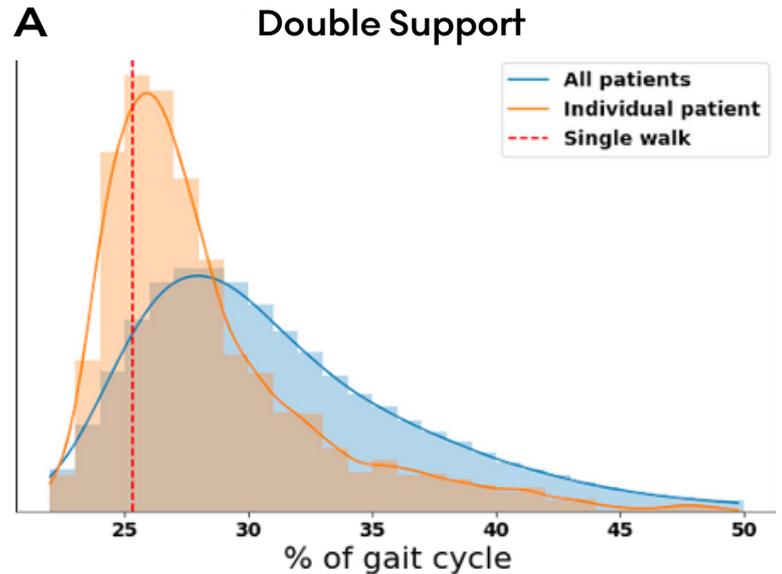
Gait parameters vary between individuals, giving rise to the distributions shown in the figures of parameter norms demonstrated above. However, gait parameters also vary between different walks of the same patient. Each patient has his or her own norms, with different peaks, ranges, and shapes. Shown here are the distributions of the double support gait parameter for the walks of four individual patients. We can see that each patient has both a different average parameter value and a different shape for the distribution of parameter values. This information offers providers important context while analyzing a patient's data and when communicating with the patient.



Combined Norms to Gauge Patient Progress

Combining the different results discussed throughout this paper, we can view any walk a patient takes within the context of both the general population norms and the norms of the patient (figure A). This information is a powerful tool to help clinicians and patients understand each walk and track the trajectory of recovery.

In addition, population and demographic norms can be displayed along with an individual patient's data (figure B). These norms can act as a target for the patient to achieve when setting goals, and allow the clinician and patient to gauge progress.





CONCLUSION

OneStep's first-of-its-kind motion analysis technology is always advancing and our database is continuously growing on a daily basis.

OneStep partners and physical therapists alike have access to unprecedented insight into specific gait parameters and objective patient mobility – with lab-level accuracy and expansive sets of normative data for comparison. OneStep's science is leading innovation in accessible gait analysis for better patient outcomes.

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OneStep's FDA-listed technology uses smartphone motion sensors to continuously analyze movement in real-life conditions, providing clinically-validated data within seconds without any wearables.

OneStep's digital platform equips clinicians with a full suite of remote PT protocols and tools that enable clinicians to deliver their best care with greater efficiency – by assessing health status sooner, more holistically, and from anywhere.

For inquiries, contact us at: info@onestep.co