

Key Strategies to Optimize Your Footpath Analysis

<https://www.youtube.com/watch?v=9o1uJMmxF8A>

hello everyone thank you for joining uh my name is Angus and I am broadcasting here from The Stride headquarters in Boulder Colorado thanks everyone for joining us um and thanks so much for your excitement about the 3D foot path view we just announced and release the 3D foot path view along with the lab selection earlier this week and it's been so great seeing everyone's messages and the excitement for the 3D foot path View and I wanted to go live again and present some more analysis strategies and some more real life use cases of this data and things I've learned from my data and hopefully some very you know simple take-home points you can use to apply to your own data so uh let's jump into it today so the topic for today is footpath analysis strategies and the strategies are meant to help you get more out of each of these groundbreaking use cases of the straight foot path data so number one injury injury recovery uh two the impact of drills on your foot path Footwear how Footwear impacts your performance how your performance changes over time as your Fitness improves and then fatigue understanding your fatigue so these analysis strategies are going to help you uh get more to your foot path to get more to these use cases and the analysis strategy is pretty simple so it's a three-step process number one make accurate comparisons of your stride foot path number two understand how your stride foot path responds and then number three personalize your training and reanalyze your foot path to see if you get those positive adaptations so just to cover each of these points in depth here and then I'm going to get into the use cases but I really want to cover these points in depth to uh relay on why this is important so uh number one when you're making Apples to Apples comparisons using stri foot path you want to select runs with comparable conditions so that could mean similar workouts similar surface conditions wearing the same shoes runs at similar speeds or or of course you can compare within a run and if you compare within a run you know typically most of those most of those factors are going to be pretty constant uh number two when you're making comparisons is you want to control for one variable at a time this is optimal of course it's not always possible but it's optimal to control for one variable at a time and that variable able could be for example a change in shoes a change in speed a change in slope uh you could change slope on keeping a power output constant to see how your foot path rech uh responds to that incline and then finally an easy tip to get more out of your stad foot path is to use Benchmark runs so if you're commonly completing a park run a critical power test or a long run or a certain type of race uh on a regular interval this could be a excellent use of um of Benchmark runs so you know if I complete a long run last week and then next week I complete the same long run I can make comparisons and let's say for example I changed how fast I was running or I changed the surface condition I was running on then I have that kind of Benchmark I can use to compare my data so that's step one there making apple to Apples comparisons uh step two so now we've collected the data it's time to analyze so we're going to pull up that foot path visualizer on the stride power center and we're going to start to analyze our data and the first thing we're going to be looking at is the foot path changes so look for patterns and how your foot path varies with different variables uh such as speed

incline or Footwear changes and you want to be analyzing things and look for these key indicators such as back kick height how far you're kicking forward side to side differences Left Right differences in terms of asymmetry and focus on those specific asset aspects in order to show see what shows the most variation and then finally you want to be mindful of your performance metrics but also your feels so the performance metrics are obvious because that's all collected in your data you can see that on the right side panel in stride Power Center look at the performance metrics such as power Pace incline those are all recorded but also you want to record your subjective feelings so it's always important to take notes for your activity keep notes in your power center account um you know things such as how you felt if you know one side of the body one leg was bothering you that can also help add critical context when you're making comparison uh comparisons with your stride foot path and then finally after we've compared the data we want to learn from that data and use that to personalize and modify the training incorporate the drills and then after we've made those changes in in our training then you know keep running and then Monitor and adjust regularly reassess the strip foot path under the same control conditions to track progress and adjust your training plan based on these assessments so th you know these steps are actually really easy to apply in practice and we're going to do a few examples here to show you how we can apply this three-step process to the data so example number one here just kind of your common steady state run so here I'm making an apple stle comparison using the strip foot path um run number one it's going to be shown in the solid line in the next line and run number two is going to be showing the dash line in the next slide and this is steady state running on the same path here in Boulder on Bobo link and the only change across these runs is that I ran slightly faster for run number two so let's take a look at the data here and here we can see run number one the solid line shown in the stride foot path graft and the dash line slightly faster so now let's apply this three-step process analyze the foot path changes identify the key indicators and then also be mindful of the performance and F metrics so what we can notice here is there is a larger area for the foot path on the faster run so that dash line the faster run there we can see for both the left and the right uh the foot path is larger and this is to be expected as you do run faster it is expected that you're going to have a larger uh larger area for that foot pth that means you know higher back kick further swing forward and it's going to produce that bigger area in that line uh the second thing we can notice is that the asymmetry is pretty constant across similar intensities so I was running faster but it was only slightly faster about seconds per mile faster and we can see that asymmetry pattern is pretty similar and we can monitor the asymmetry there because we can see the blue line and the the yellow line representing the different feet and we can see that the back kick height is higher for the yellow line while it's not quite as high for the blue line and we can see that pattern is pretty consistent if you really zoom in there if you really look closely at the data you can see that the that the uh the asymmetry differences across those speeds is is pretty constant and now we can view that in the performance me metrics once again you can see the intensity around seconds per mile faster and one other thing that's interesting to note here is the vertical oscillation so this might be seem counterintuitive first but uh if if you just change how you look at this straight fep it's actually going to make a lot of sense so for that solid line the vertical oscillation is 10.

77% is slightly lower and this might not make sense at first because you say Angus well the foot path you're back kicking higher so that means that the vertical oscillation must be

higher for the for the slightly faster run and uh there's two things to keep in mind here first in that this is simply showing the back hick height it's not showing uh the vertical oscillation of the runner and stride does report the vertical oscillation at Center of mass so when you are running fast it's possible to run faster and the vertical oscillation to be lower as you're Propel you're propelling more of your um your body mass your power forward instead of up and that back hick height does not necessarily correlate with the with the vertical oscillation so that's something to keep in mind when you look at your metrics that um you have to understand a kind of a holistic Sense on how you know different aspects of your strip fli path translate into these metrics on that right side panel there that you'll see in power center and finally after analyzing The Stride footpath data how do we personalize our training and reanalyze the stride footpath data moving forward so my big takeaway from this is that this asymmetry pattern that I've observed in this run has been shown across many activities over months of training so I do have an asymmetry between left and right uh that's shown across these runs on you know the same conditions and it's also been shown over many months of training so I've basically established my Baseline at this kind of intensity band for my asymmetry so moving forward when I'm reanalyzing my data I want to continue to look at my asymmetry and understand as my performance improves as my race times drop as my critical power increases does that asymmetry remain constant or does it increase or decrease as my performance improves that'll be a major tell um you know basically if there's any relation relationship personally for me between asymmetry and performance and then the second thing is if I start to notice changes in my asymmetry uh can I correlate that things with such as fatigue or pain on one side of my body that could be an instance of potential injury coming on potential risk of injury so I want to correlate those uh that that foot path pattern between with my subjective feel to better understand my fatigue and potentially injury risk Trends and this this is a personal assessment so um for example this asymmetry could increase I might not have any change in performance or fatigue or pain or any increase and injury risk but if I do feel like for example my right side is is feeling bad and I start to see those differences that could be something that's worth looking more into so that was example one um and now we're going to move on to example two the fatigue scenario how can we use this simple three-step process to analyze an activity where I fatigued and this is a case here where I'm using I'm making comparison within a single run and this is always a great opportunity because within a single run if I'm running on the treadmill if I'm running uh for example on a trail typically the surface conditions are going to remain the same I might be running the same speed the the weather's going to be the same I'm going to be kind of basically in the same physical condition so it's always a great idea to make comparisons within a single run so here I was doing a tradol repeat workout and I actually plan on doing more than just three repetitions here but I started to feel major fatigue on that third repetition and I stopped so we're going to be making a comparison between that first repeat and actually the second repeat was very similar to the first repeat um so basically we're going to be making comparison between the first and second repeat against that third repeat where I did feel very subjectively fatigued and I stopped the workout shortly after so here we can see that data on the left hand side in repeat number one where I was feeling good I just started the workout that is shown in the solid line and then in the dash line U that is that third repeat the one I stopped after where I was feeling fatigued so once again we're going to apply the same process here we're going to be looking at the foot path changes identifying key indicators and being mindful of performance and feel

and one of the things we observed in the last run was the foot path area grew as I ran faster and and we can see that the foot path area decreased by that third repetition but I was actually running the same speed I I you can see the speed in rep number one was minutes and seconds minutes per mile and the speed in rep number three was minutes and seconds per mile so you can also have changes in that foot path area even when you're running the same speed and the difference here was due to the Cadence so you can see right under that pace line we can see the Cadence line where I was running five steps per minute F uh you know I increased my canes by five steps per minute there and that basically allowed that foot path area to contract while maintaining that same speed some other interesting performance metrics we can take a look at here is of course the power remained very constant um and we can also look at the ground contact Time effectively the same uh the two metrics I did show the larger change were the leg spring stiffness and the impact loading rate so when I was fatigued the leg spring stiffness decreased from 14.

to . and the impact loading rate decreased as well and then just by viewing the trend on the left on the left hand side we can see that the asymmetry also increased there where there's a bigger gap between the yellow and blue lines in the dashed area versus the yellow and blue lines in the solid area where I was feeling good so asymmetry increases as I felt fatigue set in um that seems you know intuitively that seems correct the foot path shrinks my back kick was not as high I was forced to pick up my Cadence in order to maintain that speed and then we see the leg spring stiffness and impact loading rate decreased so you know for example if you're running with stride right now you're going to see these same kind of Trends in in leg spring stiffness and impact loading rate and Cadence but when you have when you add in the stri foot path then you get the idea of the Symmetry and you get to really see what this looks like and why those metrics changed and visualize how the gate changes which caused those metrics to change so moving on to step number three here so based on this what am I going to do with my training so I've seen differences I you know clearly I felt the differences how am I going to make changes and reassess on a regular basis so what I think happened here is I had taken a week off from doing an interval workout and consequently I was unable to complete this workout I had um I was was traveling I wasn't to get that workout in I actually missed a few days of running I didn't wasn't able to really stress my body to that that same high intensity as I had in the previous weeks and when I returned to training I just was not prepared I was not able to complete the workout so making changes for the next workout um I'm definitely going to lower the speed the next time I run on the treadmill I hadn't run on the treadmill in weeks um I'm going to be lowering that speed slightly and what I want to be looking for is of course I want to feel better I want to complete the workout but I'm also going to be looking at that foot path Trend those other metrics as well and maintain that strong consistent foot path against the repetitions and be able to complete my you know my plan six repetitions instead of my just three repetitions I completed so that's going to be how I'm going to be implementing it in my training in the following week and see if I can get those improvements and of course finish the workout so once again here um that three-step analysis strategy uh once you've mastered it's going to be really easy to implement when you're analyzing your footpath data number one make those accurate comparisons number two understand how you respond and then three personalize your training and then get ready to repeat the process to reassess and improve for next time so of course this is all made possible by stride Duo so just at the end of last year we introduced stride Duo uh stride foot

stride Duo pods that can connect to each other track both sides of the body and then of course stride foot path the new tool to visualize your gate visualize your foot path and recently we introduced the 3D view uh the excitement around this feature has been absolutely incredible if you already have stride foot path data this is available now by opening up the power center toggling on that 3D toggle and you can view the 3D data for your existing foot paths and uh another feature we introduced was the lab selection so this really adds in a lot of precision uh it definitely increases the you know the rate at which you're to analyze your data the convenience of analyzing your data and I just wanted to Showcase that real quick um show that how that all works here so I've just loaded up an activity this is a half marathon virtual race I completed over the weekend here and one of the cool things I didn't get to show which I think is mindblowing I didn't get to show during the last presentation was the live updating the 3D view here so if I get a certain orientation I like in the 3D view I can select a section of that run on the timeline below and I can just drag left or right here and I can visualize in 3D space how my gate changed across the run here and of course um you know if I want to analyze this I would slow down I'd be looking at the metrics I'd be grabbing specific sections but I just want to show you the really cool Interactive nature of this tool here and then I also want to showcase the laps so if you've added laps your work if you're hitting the lap button on your watch you can now see these little numbers underneath that timeline of the run and you can just jump to to specific laps in here I've loaded up a activity and I've duplicated that activity so it's the same activity activity here you can see that reflected in the Reps they have the same number of reps the same number of splits and what I can do is I can just jump to certain splits I can compare you know strides here which were at the end of the workout you can compare mile splits uh just by clicking a button and this makes it you know really easy to get consistent comparisons across runs and you know get more of your Stride Duo data so this is definitely going to be a major part of my analysis moving forward and um you know keeping that consistency If I complete the same workout over and over again I can hit the mile split at the same exact mark on these workouts on the same section of Trail and then analyze those when I go to complete my three-step analysis uh process and if you want to Embark in your journey today start collecting your stride footpath data uh stride Duo is available now and you know if you have a big training cycle coming up if you're if you're feeling strong you're feeling healthy it's awesome to collect data right now because all that data can be used as a baseline moving forward go back compare historical data and understand how your Fitness is progressing so if you already have the nextg stride you just need one additional nextg stride pod and you can get that at stride.

stride Duo store or if you have a previous generation of stride or you're not running with stride yet you can also purchase stride Duo at a awesome price we have the stride Duo Plus Membership bundle at stride. comom store which really makes the stride Duo and the visual um the visualizations accessible at a great price point so definitely head to st. com store if you are ready to order so I'm gonna be taking some questions um if anyone has any questions put those in the chat here I'm going to be sticking around just a few more minutes to answer those um as I wait for questions to come in we have some awesome feature updates we've just released here so definitely go to blog.

st. com and check those out as I already talked about we introduced the 3D flip path in last week the lab selection uh also something that that's very synergistic with the lab selection is we introduced the ability to the workout pairing for non Garmin and non-apple watches so

we have a new workout pairing assistant update in the stride mobile app let's say you record your activity with a polar watch a sunto watch wahoo choros Etc you had that structured workout in the stride ecosystem now you can pair that completed activity with that structured workout and that'll help you analyze your data and it also help you split your activities so you're properly splitting the work sections and the rest sections so that when you go analyze your stride footpath data if you're running with stride Duo you can get those really precise comparisons there so we've got a comment from uh Jonathan just a huge thank you for adding the 3D visualization I've already used it several times and identify key areas that have changed recently in my footpath looking forward to future enhancements and Jonathan we absolutely love it this is exactly what we're hoping for when we built this update this was uh motivated of course by feedback from the community so we're always reading your your comments on Facebook on the YouTube streams and uh we're always looking to implement those high impact feature updates so thank you thank you for participating in the stride community and another comment from luxmi saying yes at the moment I've started a build level one I will start training for a half marathon so I will be able to see how my stride footpath changes as I get to longer runs yeah and this is this is huge uh we're doing a lot of data analysis on the stride footpath data we've received and that's G to be part of a major update and we're starting to see some really interesting fatigue Trends on on you know for example when Runners are warmed up uh when Runners start to fatigue in the data and we look forward to you know releasing these tools to help you easily understand this uh in in kind of a metric sense just beyond the visual sense offered by the stride flit tool so um thank you Lux Magi and we we're gonna have some really incredible tools to help you analyze data in that way and another question this is this is a great question here um saying will you add a map so you can see the foot path changes on a route I've seen that crossing road or turning the corner really changes the foot path and uh my answer this is stay tuned stay tuned um this is something we're working on and we're have a major feature update soon to add this feature so um you know check your email stay you know check the stride Facebook Community Check the stride blog because uh that's where the news is going to come when the feature is ready so uh big news on that coming soon so definitely stay tuned that's all the questions we have for today uh I want to thank everyone for joining once again if you want to start collecting your stride footpath uh head to stride.

store and you know upgrade to the stride Duo by purchasing an additional next stride or if you're not running with stride yet we have the stride Duo Plus Membership option uh which is a fantastic way to get started with stride so uh subscribe to the YouTube channel if you're watching on YouTube subscribe to the YouTube channel give us a like on Facebook and uh for notifications on we set up future live streams we really appreciate everyone joining us and we can't wait to deliver for more valuable features and info and