

Long Term Tracking

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Long term tracking of athlete performance via GPS in training and games can provide invaluable insight into their physical condition and how they are responding to the physical load they are exposed to. No matter what stage of the season, long term tracking provides the context that lets you evaluate how your athletes are progressing.

Are athletes progressing?

During pre-season or in a general training phase, long term tracking lets you check what sort of effect your training is having on your athlete's fitness. An advantage of using GPS to provide the long term tracking data is that you can perform a very specific analysis. For instance, if you are in a phase of training that is concentrating on slower, aerobic types of exercise, you can track how an athlete's performance is progressing in the lower intensity zones. If, on the other hand, you have programmed more sprinting and high intensity movements, then you can look at performance in the higher speed zones and the maximum speeds reached during efforts. Even if you are focussing on recovery between efforts, this can be tracked by examining repeat sprint performance.

Long term tracking of training performance is vitally important regardless of the periodisation model you are using. If you are using a traditional periodisation model of building an aerobic base then adding 'game pace' intensity exercise closer to competition, then variables related to exercise intensity and overall aerobic load (like total distance) should gradually build through your training block. If, on the other hand, you are using a reverse periodisation model where intensity is included early in the training block, with the aim being to maintain that intensity for longer as the training progresses, then it will be important to examine the measures of high intensity effort and recovery between efforts rather than total distance covered in the session. Either way, using GPS to track improvements during a training

block will give you vital information on how your athletes are responding to the training being set for them.

Are my athletes progressing enough?

Determining whether an athlete is improving at an appropriate rate is a very difficult question to answer since just about every athlete will respond differently to a physical stimulus. The benefit of tracking every session with GPS is that you won't have to make an educated guess as to how an athlete performed in each session. This has huge advantages over a traditional 'test at the end of a cycle' model since you can virtually test every session. That is not to say that there shouldn't be a scheduled test as part of the training program, it is still necessary to perform a repeatable test after allowing adequate recovery so that you can get an indication of how your athletes have responded to the training. However, using GPS will greatly enhance the normal testing information and allow you to spot problems before they become a crisis.



If your tracking is indicating that performance is not progressing with training, incorporating GPS with other measures can help to identify what the limiting factor is. If an athlete is not progressing because they are not being physically stressed enough during the sessions, incorporating an athlete's rating of how hard they thought the session was (RPE) with the GPS information on their performance levels during the session (i.e. was there a drop off in performance or did they maintain a constant level of exertion during the session) can help you to assess the physical difficulty of the training you have set.



Another factor which can limit performance is how well athletes have recovered between sessions. Recovery is a vitally important part of training, as the body needs time to replenish and repair. Identifying when athletes are not recovering sufficiently between sessions can be aided by adding measures of performance during training (measured via GPS) to other measures of general condition like resting heart rate and sleep quality. Though some reduction in general condition and training performance would be expected during heavy periods of training, dramatic differences in training performance and condition can often point to insufficient (or inadequate) recovery. Long term tracking of these measures can help to identify when athletes are not recovering between sessions, and consequently help you to adjust the training program to maximise its benefits. Though the methods described above are good for identifying stagnant performance or decreases in performance, they still do not answer the question 'are my athletes progressing enough'. In reality, the best way to identify how much is enough is through experience with that athlete, and even then it is hard to tell when a lower rate of improvement is from factors other than the training program (perhaps they have simply reached their peak performance). Often, the best way to determine the appropriateness of your training is to combine your assessments of how stressful a session was with your assessments of how well an athlete is recovering. In effect, you are assuming that if the athlete can be kept balanced on the knife edge of not training so hard that they can't recover, but not so easy that they aren't stressing their bodies to the maximum extent possible, then the best improvements in performance will occur. Measuring training with GPS will give you the tool to make an accurate assessment of the performance during training, a vital part of knowing how close you are to striking that balance.

Another key factor in maximising improvements is the variability of training. Though the general focus of the sessions will be dictated by the phase of training you are in, setting exactly the same type of exercise stimulus each session will not lead to the maximum improvement. You need to subtly vary the exercise each session. This can be hard to do with training drills since there is no guarantee that the drill will run exactly as set out on paper. Using GPS to monitor train-

ing performance will allow you to more accurately determine and predict the exercise stimulus from each training drill, resulting in more targeted and efficient training.

Tracking Game Performance:

As the focus changes from general conditioning to competition and recovery, tracking in-game performance via GPS can still help to identify changes in an athlete's condition. General measures of physical performance such as distance run during a game and average speed will provide a good overview, and tracking these values during a season can highlight problems as they are occurring. For instance, if an athlete has generally covered 12km each game for the first 8 weeks of the season, but this week they only covered 10km, there could be a problem with how they have recovered from the accumulated load of the season. A one-off difference could simply be due to tactical factors, but if the poor result is repeated then there is a very good case for changing the routine in-between games.

There are times where the general measures do not tell the full story. Since average speed or total distance does not discriminate between short bursts of high intensity effort with rest in-between and longer stints of low intensity effort with less rest, an athlete can produce a similar general result in two very different ways.

So how should training be altered to get the athlete back to their peak performance? Well, before working out what changes should be made to training and recovery, you first need to know whether there is a problem with fitness, or a problem with recovery. If the performance is reducing during the season, it could be that an athlete is getting less fit. This may simply be because an athlete is not getting enough physical load from the game, and then is not supplementing the game load with enough training load.

Long term tracking can help to identify whether it is recovery or condition that is causing a drop off in overall performance. If the intensity of the efforts is the same from week to week but the athlete cannot sustain the efforts for the entire game, it would suggest that they are lacking in condition and could do with some more training between games. If, on the other hand, the effort is sustained for the entire game but is at a lower intensity than you have previ-



ously recorded, then that would be a sign of insufficient or inadequate recovery between games. If recovery is the problem, you should reduce the training load in between games to let the athlete 'freshen up'.

You can reduce the training load either by keeping the exercises the same and reducing the time spent training, or by reducing the overall intensity of the exercise and keeping the total training time the same. An argument could be made for either method, though I would suggest that if the fatigue is physical rather than mental, reducing the overall intensity by increasing the rest periods during the session will provide less of a disruption to the normal training routine and would be my preferred method. By increasing the rest between efforts during the session, you can still do the exercises and drills you want to do but the overall exercise stimulus can be considerably reduced.

The question of balancing recovery and fitness becomes complicated when dealing with contact sports, as much of the recovery is from impact damage to the body. When training is restricted due to general soreness, you have to find a way to keep the training load high while allowing the body to heal. If you do not have information on training load, it can be very hard to match what happens on the training track to alternative exercises like cycling. Tracking training during a season with GPS, then matching that information (combined with other key variables such as heart rate) with similar measures from an alternative exercise will help you to maintain an athlete's fitness while letting their body recover.

Summary:

Long term tracking of training and game performance with GPS provides an invaluable insight into how your athletes are responding to the physical load placed on their bodies. Subtle changes in results over time can not only indicate improvement or deterioration in performance but they can also help to identify what aspect of an athlete's condition (for instance fatigue or fitness) has caused the change.