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Issue 8: Time and Motion Analysis
- how do athletes use their TIME during a game?

Activity Analysis

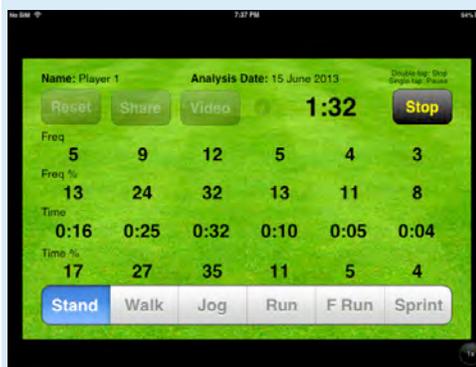
Do you want to know how an athlete, a student or a teacher uses their time during a specific activity?

You can find out the answer to this question by conducting a time and motion study.

One way that you could undertake this is by using the TimeMotion™ 'app'.

Finding out how an athlete spends their time during a game provides valuable information to a sport scientist, coach and to the player. Knowing what the player is actually doing can mean the coach or sport scientist, for example, can provide valuable education to the player and tailor a training program to the specific needs of the individual. An activity analysis is a time and motion study to identify what an athlete does (the activity) and how frequently (time).

Understanding the demands of the energy systems, and the type of movement patterns helps a sport scientist or exercise physiologist tailor a training program to meet the specific demands of the position that the athlete is playing in that sport. One size fits all training programs don't tend to tailor the training requirements to the individual needs of the specific athlete. Knowing what the demands on the athlete are takes the guess work out of developing these programs. Conducting a time and motion analysis on an elite athlete, playing the same position and sport, enables you to compare the data to that of a more junior player to understand the deficiencies and therefore the potential training needs.



Dr. Grant Abt who I am sure some of you follow on twitter @grantabt is an Australian academic and sport scientist based in the UK who has done considerable work with elite sportspeople and teams. I have mentioned him before in a very early newsletter when discussing the PLATOSPORT™ 'app' he developed. He has also developed a time motion analysis 'app' called TimeMotion™, which I will specifically discuss here.

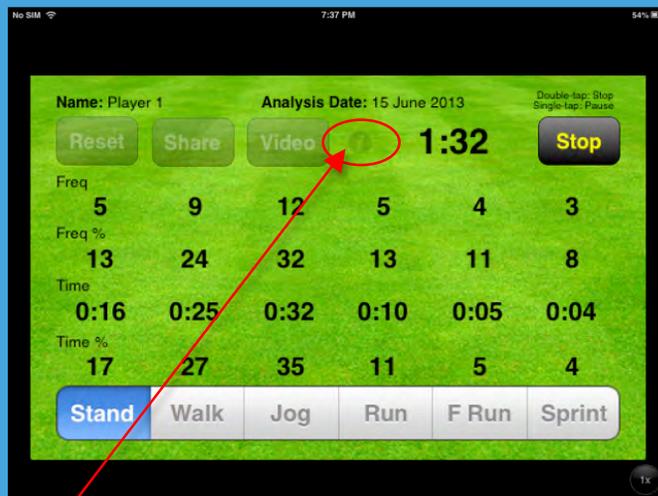
It is very simple to use – is FREE and can be used to conduct an activity analysis on an athlete either live or after the game by importing video footage or watching video footage on another device (e.g. tv). It will give you instant feedback about how much time is really spent in high-intensity activity (sprinting) and how much time is actually spent standing, walking and jogging. The findings may be surprising!

Features

One of the nice features about the TimeMotion™ 'app' is that you can very easily change the categories so that they are labeled with what you specifically want data about.

The standard category labels are:
STAND WALK JOG RUN FAST RUN SPRINT

If you are only interested in a work to rest ratio so that you can determine for example the specificity (energy system requirements) of interval training (work to rest ratio) as part of the training program prescription then you would only need to use two categories REST and WORK (*SPRINT*).



If you wanted to look at how active or passive the recovery was then you could use three categories PASSIVE, ACTIVE, SPRINT. To do this you select the .

This gives you an options box that you can type in category labels, the player name and turn off any extra labels.



If you are interested in identifying how often a specific player receives or passes the ball then you can set up a category with the players name on it and a label that relates to the data you are interested in collecting.

Once you have the labels set up then you simply touch the relevant label every time the athlete completes that activity. For example the person may be STANDING to start with but as soon as they start jogging you touch the JOG label and the frequency and time is recorded and will continue until you select a different movement (label).

This flexibility of category labels lends itself to being used for purposes other than sport as well. For example:

1. As a teacher you might be very interested in the type of feedback you give to your students. You could simply change the categories to reflect this and have someone observing your class enter the data.
2. Or perhaps you want to quantify how you spend your time as a teacher during a lesson by determining how much time you spend with different groups of students.
3. Another use could be to quantify student on-task behaviour during class. In which case you can set up categories to have an observer recording this data.

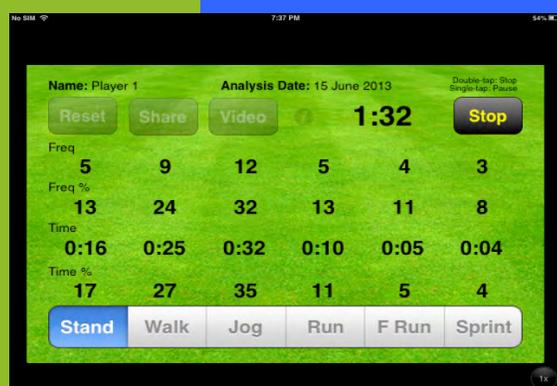
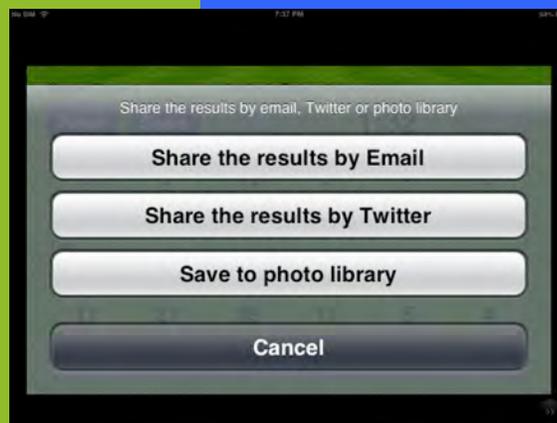
Getting Access to the data you collect

One of the important things when using an 'app' is being able to get the data out of the 'app' to use or save in another format. The TimeMotion™ 'app' allows you to share the data by email, SMS or twitter.

This means that it is readily accessible to the player, the coach or sport scientist to be used on multiple devices, not just the one it was recorded on with the 'app'.

Getting information out of an 'app' on a tablet or smart phones so that it can be used on a different device can be problematic. It is one of the first things to check when selecting an 'app' for use when multiple people need to access the data - which would usually be the case when conducting a time and motion study with a team.

If you choose email as the output you get emailed a photo of the data collection screen as well as the data.



Analysis Date	15 June 2013
Player Name	Player 1
Analysis Time	1:32

Category	Frequency	Frequency %	Time	Mean Time	Time %
Stand	5	13	0:16	0:03	17
Walk	9	24	0:25	0:03	27
Jog	12	32	0:32	0:03	35
Run	5	13	0:10	0:02	11
F Run	4	11	0:05	0:01	5
Sprint	3	8	0:04	0:01	4

Activity Profile: Stand, Walk, Stand, Walk, Jog, Walk, Run, Jog, Walk, Jog, F Run, Sprint, F Run, Run, Jog, Sprint, Jog, Walk, Jog, F Run, Jog, Stand, Walk, Stand, Jog, Run, Sprint, F Run, Run, Jog, Run, Jog, Walk, Jog, Walk, Jog, Walk, Stand.

These results were recorded and analysed by TimeMotion for iPhone developed by Dr Grant Abt. Visit [the TimeMotion website](http://www.grantabt.com/timemotion.html) for more information, or [download it](#) from iTunes.

The TimeMotion 'app' provides an excellent accessible method to understand the concept of conducting an activity analysis or for use by amateur teams who don't have the money to pay for expensive and sophisticated software packages that are used by elite sports teams to conduct their time and motion analysis such as:

- Prozone™ (<http://www.prozonesports.com/index.html>)
- SportsCode™ (<http://www.sportstec.com/products-sportscod>)

Additional information on TimeMotion™ 'app' can be found

<http://www.grantabt.com/timemotion.html>

