

# Welcome to your

# - Sportsfields

This test device is intended to assist you in the management of sports field surfaces or any other impact attenuating system that are subject to a Standard referencing ASTM F3146, ASTM F1292, ASTM F355, a 4.6kg hemispherical headform, or World Rugby Regulation 22. The **GfactorGo** can be used for establishing injury prevention measures and asset management. The first drop of the *GfactorGo* will give you the same value for *g* and HIC as a Triax2010, Triax2015 or TriaxTouch. In the case of Rugby, Regulation 22 and ASTM F3146 procedure B allows the performance of singular drops per test location.

The *GfactorGo* is a handheld device and even though it does provide a confirmation of drop height, it is difficult to perform the more rigorous tests such as Procedure A in F3146, but fully capable of Procedure B. Since there are standards for each surfacing type, these should be the guide for the use of the *GfactorGo*. It is important to understand that the *GfactorGo* cannot be used to perform a formal test to determine critical height to ASTM F3146 due to the lack of a supporting device. Keeping this in mind, the *GfactorGo* can be used to strategize in relation to a plan and future testing.

## **Determining tolerable test thresholds**

Using *GfactorGo* with ASTM F3146 to start with the understanding that playing systems might have variations within them. This is particularly the case with multilayer systems with infill that can disperse when impacted.

The *GfactorGo* is ideal for Rugby fields that have been tested formally to ensure they are still performing within required parameters.

You should be able to use the *GfactorGo* for other sports field configurations using the head injury prevention considerations that have brought the Rugby Standards. Although these are informal, the result would provide the owner and/or the user of the field what the expectation would be if this field were also be used for Rugby.

Since the 1000 HIC and 200g are minimum pass/fail values, making sure the surface does not reach these values is important. As a result, the operator of the *GfactorGo* should consider a *g* value less than 150 and the HIC value less than 750 for most synthetics, but based on your knowledge of the surface you are testing. Higher values should suggest the need for the more formal and rigorous testing.

The World Rugby Regulation 22 requires that the HIC shall be <1000 and the critical time ( $t_2-t_1$ ) must be >3ms from a drop height of 1.3m (51"). Detailed requirements for Regulation 22 can be found at <https://www.world.rugby/handbook/regulations/reg-22/reg-22>.

## **The procedure for testing with the GfactorGo**

The ASTM F3146 and World Rugby Regulation 22 require that the HIC shall be <1000 from a drop height of 1.3m (51") with the critical time being >3ms. The drop height needs to be physically measured and *GfactorGo* does offer an optional laser drop handle to ensure you are higher than the required drop height. The test locations for Rugby are within Regulation 22, but the ease of use of the *GfactorGo* allows the user to test significantly more locations in the field. Impact testing is but one of the tests required as part of a larger

assessment process for player surface interaction for rugby. Detailed requirements of all the testing required to meet Regulation 22 can be found at <https://playerwelfare.worldrugby.org/playing-surfaces>

The drop height does not have to be at 1.3m (51") for all sportsfield applications. The user of the *GfactorGo* should use their judgement of the sport, the athletes and injury prevention to select drop height and g and HIC values that best meets the needs of the owner and athletes.

### Steps for testing

1. Find the fall height or height above the drop height the test is to be performed from
2. Measure and record the measured height.
3. Record the location for each drop location (a site plan might be of assistance)
4. Take the *GfactorGo* from the case and set up as per the user's manual
5. Once the *GfactorGo* is assembled and ready for the drop
  - a. Elevate the *GfactorGo* holding the handle
  - b. Height can be determined by "eyeballing" the fall height and being above it or set the optional laser to determine the height of the *GfactorGo* above the surface
  - c. Once above the fall height, release the *GfactorGo* by depressing the button
6. Review the data, save the data and advance to the next drop # and repeat the process at a new location

The drop test data can be uploaded to a PC and keep a permanent record of the testing. The *GfactorGo* manual will provide information of preserving the data and the micro SD card contains the software that can be loaded on a PC. The manual delivered with the *GfactorGo* will have detailed instructions on the procedures for operating.



The operator ensures the drop height is greater than 1.3M, either by "eyeballing" or using the laser distance finder.

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