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Football Medicine Strategies for Player Care

SIMPLE AND COMPLEX REACTION TIME AT VISUAL STIMULATION, BEFORE AND AFTER A REHABILITATION AFTER KNEE SURGERY IN FOOTBALL PLAYERS

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Introduction

Agility and coordination are two of the many attributes required to become a successful player. Complex movements such as dribbling, turning, passing and intercepting often necessitate quick and large changes in speed and direction and correctly executing skills requires good body coordination.

Agility refers to the ability to change the direction of the body abruptly or to shift quickly the direction of movement without losing balance. It is dependent on a combination of factors such as speed, strength, balance and co-ordination. The ability to turn quickly, evade challenges and side-step calls for good motor coordination and can be measured using different agility tests.

To study 2 different tests aimed at the development of movement speed and agility at the end of a rehabilitation protocol after knee ACL surgery.

Methods

The FitLight device (FitLight Sports Corp, Aurora, Ontario Canada) was used to assess the performance, in a group of 10 male soccer players (age: 25.0±5.0 years; height 179±6 cm; weight 72.5±8.5 kg). It is a wireless light system which includes 8 luminous discs controlled by a tablet (**Figure 1**).

The discs are used as programmed targets of visual reaction for the player and can be deactivated by full contact of the athletes' feet, whereby the system is able to record time.

The subjects performed 2 different tests.

Test 1 (static) (**Figure 2**): foot tapping for one minute in response to the visual stimulus randomly programmed to the right or left foot.

Test 2 (dynamic) (**Figure 3**): sprint of 2 m and changing directions di 180° for 20 trials, every time starting from the visual stimulus.

Every test was proposed three times for each test, before rehabilitation on the court (PRE) and 3 times after discharge (POST); the best value was taken in every test. Before the test each athlete had a learning session, until performance stabilization.

Tests were proposed also to a control group of 40 players (age: 25.0±5.0yrs; height 178±7 cm; weight 74.1±7.6 kg).

Results

Results are shown in **Table 1**.

Table 1

	N	Test 1		P	Test 2		P
		PRE	POST		PRE	POST	
Injured players	10	235±19ms	233±21ms	0.1771	1430±167ms	1323±181ms	0.0012
Controls	40	239ms		--	1385ms		--

Mean 235±19ms (PRE) and 233± 21ms (POST) values of times recorded during Test 1 and 1430±167ms (PRE), 1323±181ms (POST) during test 2 only in injured players.

No significant differences (t-test for paired samples) were found for Test 1 administered in PRE and POST. Test 2 showed an improvement of the reaction time in POST (P=0.001). The average of the values of the POST test in patients, was not significantly different from the control group.

We also studied the repeatability of the Tests (One-way Anova, SPSS software). Results showed that both tests are repeatable (Test 1: F=0.014, P=0.986; Test 2: F=0.137, P=0.873).

Conclusions

There is a good repeatability of both the proposed tests.

The subjects appreciated Tests cause they were stimulated to challenge themselves, and that was also a good psychological effect which let the subjects forgave the scary of using the injured leg.

Only Test 2 (dynamic) can appreciate the improvement of the agility level of football players after knee surgery, and for this reason we suggest to use that one as good marker of the improvement after the functional rehabilitation.

Right now Test 1 is not relevant as a marker of the improvement of the rehabilitation process, but maybe in the further researches with this method we could find some better results for the Test 1.

Figure 1

The FitLight system.

Figure 2

Test 1 Static.

Figure 3

Test 2 Dynamic.