



The Use of Active Electrostimulation for Immediate Performance Improvements in Professional Baseball Players

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I. INTRODUCTION

On March 2011, sports coaches viewed with great interest the study published by Dr. Warren in California in the Journal of Strength and Conditioning Research, Volume 25(3): 683–688, titled *"Effect of Three Different Between-Inning Recovery Methods on Baseball Pitching Performance."* Said study showed an exponential performance increase of baseball players after brief sessions of EMS (electrical muscle stimulation) between innings (9 in a regular game.)

Like very few other sports, baseball demands an extremely high level of explosive strength and speed. The players recover during the breaks between innings. These breaks produce sudden changes in their physical disposition and cool down their muscles, which can greatly reduce their capacity.

To this date, studies have shown several methods for a quick and efficient recovery of muscular performance during a baseball game:

1. Passive recovery: The athlete rests, with no physical activity, for 6 minutes.
2. Active recovery through light jogging: The athlete jogs for 6 minutes.
3. EMS recovery (electrical muscle stimulation): The athlete undergoes a 6-minute session of EMS.

I. DEVELOPMENT OF THE STUDY

With the objective of augmenting the knowledge about muscular recovery on professional baseball players, and basing this study on the results of Dr. Warren's previous study, we did a comparative study of 7 professional baseball players from the Camaguey sports team, all of them high-performance players, of international standing, aware of their physical capacity and their strength.

The average age of the athletes who participated in the study is 32 years old, all of them without a significant history of lesions or muscular problems of any other kind.

All seven athletes were subject to active electrical muscular stimulation using AQ8 System® equipment in the bullpen during the breaks in a regular baseball game.

Depending on the time they were to enter the game, they were fitted with a Biosuit garment and were exposed to the maximum electrical stimulation they could endure for a duration of 6 minutes, while performing light jogging exercises, stretching and bending. After each 6-minute session, they entered the game as usual, and we recorded their in-game performance.

Based only on their professional opinion, these were the results of the experience:

1. PSYCHOLOGICAL MEASUREMENT

In their own opinion, they experienced a momentary sensation of euphoria that lasted 10 to 15 minutes after the session. Afterward, they experienced positive mental relaxation, a diminished sensation of stress but without any loss of focus, good humor, and enhanced self-confidence.

2. SPEED MEASUREMENT

For 10 to 15 minutes after the stimulation, five of the seven athletes mentioned feeling a certain level of “weakness” in their legs. However, from that moment on they experienced a level of muscular relaxation that in their opinion, could be quantified as responsible for a 15% increase in their running speed.

3. STRENGTH MEASUREMENT

The strength–time ratio known as explosive strength was estimated as mildly increased during the rest of the game.

In spite of recognizing a “strange” sensation in their muscles immediately after the 6-minute EMS session, six of the seven athletes described their condition as more readily able to developing strength actions, both static and dynamic. They described their muscle strength as having better contraction and presence during the pitching routine or field catch.

ADVICE AND OPINIONS OF SPORTS COACHES

After the study, all participants consider its results to be highly positive, and to be attractive and beneficial for the athletes who participated. Therefore, I wish to propose the following points to be considered in the muscular recovery process:

Load progression. The recommendation is to begin the stimulation with low frequencies and to gradually increase frequency to avoid discomfort, making the process more comfortable for the subject of EMS.

Continuity. The process can be implemented as a continuous practice to allow the body to accustom to repeated stimulation.

Variety and engagement. The recommendation is to be creative and bring variation to the exercises during the stimulation, in order to make the process fun so the athletes can enjoy it without feeling stressed.

CONCLUSIONS

During the study, we found no negative consequences in the participating athletes. All participants acknowledge that they experienced a general state of highly positive psychological disposition after the EMS session.

Despite the possibility of their running speed being affected by “tingling” in the femoral quadriceps and hamstring muscles, after a short time and for the following half hour they noticed an increase in speed and explosive strength.

As a consequence, we consider the use of active electrical stimulation to be highly beneficial for recovery and an increase in strength and speed.