

## The Mental Training of a Tennis Player using Biofeedback – Preliminary Case Study

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### Introduction

The possibility of measuring and controlling tennis players' mental state (e.g. concentration) appeared as being beyond control until recently. Reaching awareness of changes in ones physiology and the possibility of observing results of auto-regulation is possible with the help of highly precise techniques of measurement - Biofeedback. NeuroHarmony, the first portable neurofeedback system, is used in numerous sport disciplines but its use is new in tennis. Theoretically the usage of biofeedback should improve the sportsman's ability to focus on the given task (but also the ability to relax) and to steer the emotional state (Blecharz, 2002). Therefore, we believed that it was worth researching if training with the help of biofeedback influences the efficiency of tennis performance. The detailed aim was to measure if the mental training based on use of feedback improved the quality of the serve.

### Material and method

An elite, 17 year old tennis player voluntarily took part in the research. In the first part of the research the player performed a test of serving precision designed by Królak (1997), which consisted of forty strokes, ten for each target placed in corners of the service boxes. Following this procedure the player participated in eight 20 min sessions of neurofeedback mental training during a 3 week period. Sessions were focused on creating and controlling the optimal activity of the brainwaves in order to regulate the state of attention during serving. The serve precision test was repeated after the 3 week training period.

### Results and Discussion

The results of the research (before and after the biofeedback training session) are presented on Figure. 1

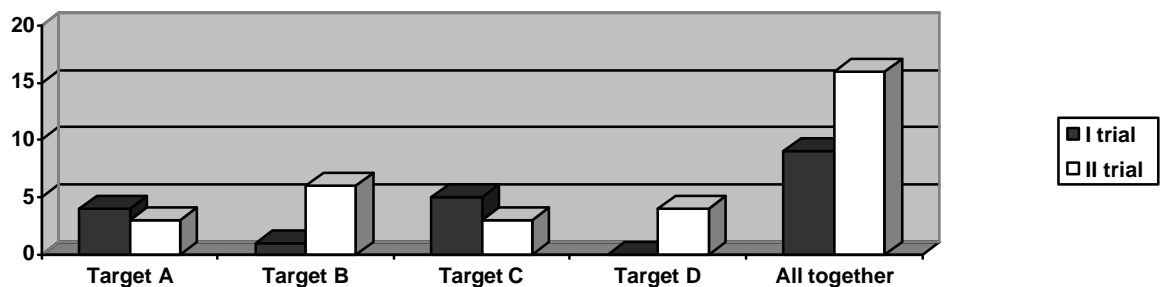


Figure 1. Results of service tests - before biofeedback training (I trial) and after biofeedback training (II trial)

Following the experimental mental training procedure, there was an improvement in serve precision. Therefore, it can be proposed that neurofeedback mental training had a positive influence on the efficiency of the players serve. It must be considered that the study concerns only one individual case, but certainly results encourage further investigation. Based on this experience neurofeedback mental training procedures are being modified and new, more comprehensive research planned.

### References

- Blecharz, J. (2002). Mental training with the usage of biofeedback method of improving attention. *Sport Psychology*, Tom III, PTNKF, Warszawa.  
 Królak, A. (1997). Tests for tennis players. *COS*, RCMSKFiS, Warszawa.