

Abstract of Doctoral Thesis

Title: Evidence-based study of mental training for elite athletes

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Introduction

The psychological aspect of sports training has been recognized as a crucial factor in competing at world-class sports events such as the Olympics, and many case studies have been done on this topic (Vernacchia & Henschen, 2008). However, such work is largely limited to evaluations derived from subjective, experiential points of view. Thus, few in-depth reports have been conducted on intervention programs' effectiveness to meet elite athletes' specific needs in terms of their ongoing internal changes and performance enhancement.

Purpose

The main purpose of the present study is to examine elite athletes' mental training by observing the training effects. Both qualitative (yielding rich details on internal processes) and quantitative methodologies (involving biofeedback (BF) in the context of psychophysiology) were used.

Methods

There are three defined research tasks. First, the effects of mental training were evaluated in Study 1 using the case study approach to reveal a correlation between an American elite gymnast's participation in a long-term program based on self-efficacy theory and its effects on his performance.

Study 2 evaluated the effects of mental training using an immediate BF to visualize the process of breathing exercises performed by three Japanese Olympic athletes and one Japanese national team member.

Study 3 served as a final phase and involved two tests of one Japanese Olympic athlete and fourteen shooting athletes. After acquiring mental skills in a laboratory context, the subjects applied them in a competitive context; their pre-performance degree of focus was analyzed to evaluate the effects of mental training on their performance.

Results

Study 1 utilized a qualitative approach to elucidate, in a way not obtainable with numerical data, the correlation between the elite gymnast's internal changes and improvements in his resulting performances and the effects of mental training.

Study 2 revealed a relationship between objective physiological responses resulting from breathing exercises and subjective reports of relaxation effects, demonstrating the effects of mental training from both quantitative and qualitative perspectives.

Study 3 visualized the effects of mental training, including data from a competitive context, to elucidate the differences in psychological stress felt by elite athletes in an experimental lab context and an actual competitive context. These data were used to comprehensively evaluate the effects of mental training.

Conclusion

In this study, the effects of stepped, comprehensive mental training were quantitatively and qualitatively analyzed, and the existence of a stepped process of psychological skill acquisition in mental training programs was demonstrated.

These evidence-based data were classified into distinctive psychological phases. Ultimately, as a result of this study, the "Mental Training Stage Model" was advocated in order to identify psychological interventions aimed at facilitating smooth behavior transitions for elite athletes.