



RESEARCH TO  
PRACTICE 2018

27-29 MARCH 2018  
BRISBANE, QUEENSLAND

## THE COMPLEXITY OF MIXING EXERCISE MODES: IS ADAPTATION COMPROMISED OR JUST COMPLICATED?

Dr Vernon Coffey

There is a multiplicity of factors that can determine the adaptation response to exercise because training-induced changes within physiological systems represent the cumulative effect of repeated bouts of exercise undertaken over days, months, or years of training. Repeated bouts of *aerobic training* typically lead to enhanced cardiovascular fitness and improved endurance performance while *resistance training* programs promote hypertrophy and increase the force generating capacity of skeletal muscle. However, combining divergent exercise modes such as resistance- and endurance-type training into a single program, termed *concurrent training*, provides unique challenges for exercise prescription. Moreover, given skeletal muscle is the primary “target tissue” with concurrent training, how to optimise the adaptation response to simultaneously promote endurance and strength/power characteristics represents the highest complexity for designing training programs.

Whether there is any incompatibility of adaptation responses when different exercise modes are undertaken in the same program has been the subject of intense scrutiny in recent years. The pioneering work in concurrent training began when Robert Hickson (1980) provided the first evidence for what was termed the “interference effect” showing gains in muscular strength are impaired when resistance training is undertaken together with endurance training. However, the findings of subsequent studies have provided some contrary evidence to the prevailing concept of adaptation interference with concurrent training. Consequently, there remains a lack of clarity in our current understanding of factors that ameliorate or exacerbate the potential for an interference effect and the conditions under which resistance training adaptation may be compromised.

This presentation will define important underlying principles in evaluating the specificity of training adaptation which is intricately linked with the individual response to concurrent training, outline variables with potential to impact the interference effect, and identify the types of clients/athletes for whom the interference effect should be a key consideration in exercise prescription.

**Abstract number:** 043  
**Session:** The Conundrums of Concurrent Training  
**Date:** Thursday, 29 March 2018  
**Time:** 1:30pm – 3:00pm  
**Co-Presenters:** Dr Vernon Coffey; Dr Donny Camera; Dr Jonathan Bartlett  
**Panel Practitioner:** Mr Ryan Timmins  
**Session Chairperson:** Dr Stuart Cormack