

## 8. Abstract

Post-Activation Performance Enhancement (PAPE) phenomenon relies on increasing muscle power in dynamic exercise (i.e.g sprinting, jumping, throwing) after performing a high intensity exercise (i.e. expressed as %1RM), usually of a strength nature. Efficacy of a given protocol depends on many factors and the highest PAPE effects can be observed in the athletes with relative strength level. Due to large interpersonal variability and individual response to a given stimuli, an appropriate volume, intensity and rest period of a conditioning activity (CA) to maximise possibility of increasing muscle power in a dynamic exercise.

The research was conducted in elite volleyball players (publications 1 and 4) and physically active males (publications 2 and 3). The goal of the first publication was examining the efficacy of a protocol to induce PAPE and increase vertical jump in two jumping tests: CMJ and SJ and the results indicate higher effect for SJ. The goal of the second publication was examining the efficacy of the same PAPE protocol with different rest intervals on vertical jump height in SJ and 90s protocol was found to be the most effective one. The goal of the third publication was comparing the efficacy of the same PAPE protocol while using only traditional resistance (TR) or the addition of accommodating resistance (AR) and the results indicate a positive effect for AR and no effect for TR. The goal of the fourth publication was to verify the efficacy of multiple implementation of the same PAPE protocol to elite volleyball players and a good reliability was found in the volleyball players under complex training.

A study protocol introduced in publications 1, 2 and 4 was ineffective to induce PAPE effect in elite volleyball players (publications 1 and 4) and effective in physically active males (publication 2). In case of introducing AR, prolonging rest interval to more than 90s did not allow to induce PAPE effect in physically active males (publication 2). Introducing relatively short rest period after CA (90s) while using traditional resistance did not allow to observe PAPE phenomenon in physically active males (publication 3). PAPE is an individually existing phenomenon – an individual response to a given CA was observed in elite volleyball players and physically active males (publications 1, 2, 3, 4). Additionally, introducing PAPE phenomenon under complex training in elite volleyball players was found to have a good reliability (publication 4).