

Abstract

The aim of the study was to evaluate the relation between climbing performance and energy demands while climbing through a specific submaximal test.

The sample consisted of twenty-six climbers (age $26,8 \pm 3,3$ years, weight $70,6 \pm 6,2$ kg, height $177,6 \pm 6,5$ cm). Climbers were deliberately chosen so that their performance covers as much scale difficulty of UIAA (Union Internationale des Associations d'Alpinisme) as possible. The performance was given by the climbers currently the highest ascent in the style of RP (Red Point). Performance of these climbers ranged between 4 to 10 degrees UIAA.

Climbers were subjected to submaximal climbing test, which lasted three minutes in one slope. They moved at a constant speed of 25 movements. min^{-1} on climbing route, already known in advance, the slope after 3 minutes changed from 90° to 105° .

VO_2 (oxygen consumption), SF (heart rate) and V_E (minute ventilation) significantly correlated with climbing performance of RP (90° , VO_2 , $r = -0,82$; SF, $r = -0,66$, V_E , $r = -0,77$; 105° , VO_2 , $r = -0,84$; SF, $r = -0,78$; V_E , $r = -0,80$). Respiratory rate during submaximal climb was about 25 breaths. min^{-1} , which refers to a link with a climbing speed. VO_2 during submaximal climbing can be used to evaluate the economy of movement.

Keywords

sport climbing, submaximal test, oxygen uptake