ASSESSMENT OF THE PERFORMANCE OF AGENTS USED TO INCREASE GRIP IN ROCK CLIMBING

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ABSTRACT

A finger friction test wasdeveloped to test the performance of chalk and liquidchalk in dry conditions and conditions simulatingsweaty hands. This wascomparedwith data obtainedwithout the use of friction modifiers. These friction modifierswerechalk and liquidchalk. Theyweretested on four different rock samples and at four different forces (5, 10, 15 and 20N). Thesewerelimestone, fine grainedsandstone, coarsegrainedsandstone and gritstone (all commonlyfound in the Peak District near Sheffield whereclimbingisextremelypopular). A smallamount of testingwasalsodone on the effect of a range of skin moisturelevels in the testingfinger.

It wasfound in dry conditions the addition of chalk and liquidchalkhad no negativeeffect on the coefficient of friction, with a possible slightimprovement at forces higherthan 10N. This wasalsoseen at forces of 10N and below on rock sampleswithhigherroughness. At low force and roughnesschalkwasshown to have anegativeeffect on the coefficient of friction. In tests withmoisturelevelssimulatingsweaty hands chalk and liquidchalkimproved the coefficient of friction at all forces and rock types tested. There was no cleardifferencebetween the performance of chalk and liquidchalk in terms of affecting coefficient of friction. Theseresults support the use of chalk and liquidchalk in rock climbing. A moisturecurvewasobtainedthatsuggestsaslight addition of moisturewouldimprove the coefficient of friction but resultsalsosuggestthiswouldbedifficult to obtain and maintainwithcurrent friction modifiers.