

## KESELESAAN BUT KAWAD SEMASA KEGIATAN KAWAD MELALUI EMG (Marching Boots Comfort during Marching Activity via EMG)

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### ABSTRAK

But kawad merupakan suatu kelengkapan penting yang digunakan dalam kegiatan berkawad. Namun, penggunaan but kawad ini semasa kegiatan berkawad secara berulang kali boleh menyebabkan kecederaan pada kaki. Oleh itu, kajian ini bertujuan untuk melihat kesan tindakan otot apabila berkawad menggunakan but, kasut sukan dan tanpa berkasut. Ujian elektromiografi (EMG) digunakan untuk mengesan kelakuan otot pinggir bawah badan, iaitu otot peroneus longus, ekstensor digitorum longus, gastroknemius kepala sisi dan gastroknemius kepala tengah. Soal selidik dijalankan untuk mengumpul data laporan kecederaan kesan memakai but ketika berkawad dan kajian EMG dilakukan untuk mendapatkan daya tindakan otot apabila berkawad. Subjek bagi soal selidik dipilih daripada kadet PALAPES. Keputusan menunjukkan 52% responden melaporkan mengalami kesakitan kaki apabila berkawad dan otot gastroknemius kepala tengah menghasilkan nilai daya yang lebih besar, iaitu dua kali ganda berbanding dengan otot lain semasa kegiatan berkawad dengan memakai but berbanding memakai kasut sukan. Oleh itu dapat disimpulkan bahawa apabila beban yang lebih besar dikenakan, otot akan bekerja lebih atau menghasilkan daya yang lebih besar untuk memastikan sistem berada dalam keseimbangan.

*Kata kunci:* kawad; elektromiografi (EMG); but kawad; daya otot

### ABSTRACT

Boots are important gears used in a marching activity. However, the use of these boots when marching repeatedly would cause injuries to the foot. Therefore, this study aims to study the effects of muscles' actions during marching when using boots, sports shoes and without shoes. The electromyography (EMG) test was used to track the behaviour of lower limb muscles which are peroneus longus, extensor digitorum longus, gastrocnemius medial head and gastrocnemius lateral head muscles. A survey was conducted to collect injury reported data affected from wearing boots and EMG investigation was performed to collect muscles activity during marching. Subjects for survey and experiment conducted were recruited from PALAPES cadets. Results show that 52% of respondent reported foot pain during marching activity and gastrocnemius medial head muscle produced higher value of force compared to that of other muscles when marching using boots than that of wearing sports shoes. It is concluded that when a greater load is exerted, muscle will produce a higher value of forces to ensure system equilibrium is achieved.

*Keywords:* marching; EMG; marching boots; muscle force

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