SUPLEMENTASI *CURCUMIN* SERTA DAMPAKNYA TERHADAP PROSES *RECOVERY* AKIBAT *PERIPHERAL FATIGUE*

TESIS

diajukan untuk memenuhi salah satu syarat mendapatkan gelar
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Sebuah Tesis yang Diajukan untuk Memenuhi Syarat Memperoleh Gelar Magister Pendidikan (S2) pada Program Studi Pendidikan Olahraga Sekolah Pascasarjana

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ABSTRAK
SUPLEMENTASI *CURCUMIN* SERTA DAMPAKNYA TERHADAP PROSES *RECOVERY* AKIBAT *PERIPHERAL FATIGUE*

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Curcumin (1,7-bis(4-hydroxy-3-methoxyphenyl)-1,6-heptadiene-3,5-dione) adalah sebuah ekstrak yang berasal dari akar tanaman kunyit dan banyak digunakan di dalam berbagai bidang, salah satunya olahraga. Penelitian pada hewan mengungkapkan bahwa *Curcumin* memiliki potensi dalam mengurangi kelelahan dan mempercepat proses *recovery* setelah mengalami kelelahan yang bersifat peripheral. Tujuan dari penelitian ini adalah untuk melihat potensi curcumin dalam mempercepat proses *recovery* setelah mengalami *peripheral fatigue* pada manusia yang dilihat dari, pemulihan *heart rate* (bpm), pembuangan laktat (mmol) serta pemulihan performa *vertical jump* yang teridentifikasi dari power tungkai (watt/Kg) dan tinggi lompatan (cm). 18 orang pria sehat (usia= 19,68±0,7 tahun; BMI=20,94±1,43 Kg/m2; VO2Max=49,30±3,5 ml/kg/min) yang dibagi ke dalam dua kelompok (eksperimen dan kontrol) melakukan proses eksperimen selama 4 minggu. Latihan daya tahan menggunakan *ergocycle* dengan intensitas sedang (50-70% HRMax) dilakukan sebanyak 3 kali dalam seminggu. Hal tersebut ditambah dengan suplementasi *curcumin* dengan dosis 1,1 gram setiap harinya untuk kelompok eksperimen dengan kelompok kontrol diberikan *placebo* yang berisi gula. *Cunningham and faulkner test* digunakan sebagai *exercise induced-peripheral fatigue* yang selanjutnya data dari setiap indikatornya. Pengukuran dilakukan sebanyak 3 kali yakni awal, minggu ke-2 dan minggu ke-4. Kelompok eksperimen menunjukan peningkatan pemulihan *heart rate* ($p < 0.05$; *baseline* vs *week 2* vs *week 4*; 58,77±17,00 vs 81,77±10,83 vs 76,77±9,94 bpm). Pembuangan laktat terdapat perbedaan yang signfikan hanya antara *week 4* dan *baseline* ($p<0.05$; 4,61±2,49 vs 2,24±3,47 mmol). Sementara itu, pemulihan *leg power* dan *jump height* tidak mengalami peningkatan yang signfikan ($p>0.05$). Apabila dibandingkan dengan kelompok kontrol, hanya pemulihan *leg power* yang berbanding signifikan. Namun hasil rata-rata kelompok eksperimen lebih baik dibandingkan kelompok kontrol. Hasil penelitian ini menyimpulkan bahwa suplementasi *curcumin* berpotensi dalam mempercepat proses *recovery* akibat *peripheral fatigue*.

Kata kunci: *Curcumin, Peripheral Fatigue, Recovery*.

ABSTRACT
CURCUMIN SUPLEMENTATION AND ITS EFFECT ON RECOVERY PROCESS FOLLOWING PERIPHERAL FATIGUE

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Curcumin (1,7-bis (4-hydroxy-3-methoxyphenyl) -1,6-heptadiene-3,5-dione) is an extract derived from the roots of turmeric and it widely used in various fields, one of which is sport and exercise physiology. Animal studies revealed that curcumin has the potential to reduce fatigue and faster the recovery process after peripheral fatigue. The purpose of this study was to determine the ability of curcumin for accelerating the recovery process after peripheral fatigue in human; as well as lactate clearance (LC), decrease of heart rate (DHR) and the recovery of vertical jump performance identified by the leg power (LP) and jump height (JH). 18 healthy men (age = 19.68 ± 0.7 y.o; BMI = 20.94 ± 1.43 Kg/m2; VO2Max = 49.30 ± 3.5 ml/kg/min) were divided into two groups (experiment and control) carried out the experimental trial for 4 weeks. Endurance training using ergocycle with moderate intensity (50-70% HRMax) was done 3 times a week. 1.1 gram/day curcumin consumed by experimental group and the control group was given a placebo sugar within. Cunningham and Faulkner test was used as exercise induced-peripheral fatigue and vertical jump test using Force Platform 3D were used to obtain those indicators data. Measurements were made three times; baseline (0 week), second week and fourth week. Experimental group showed increase of DHR ($p < 0.05$; baseline vs second week vs fourth week; 58,77±17,00 vs 81,77±10,83 vs 76,77±9,94 bpm). On the other way, LC only significantly increase at fourth week ($p < 0.05$) compared with the baseline (4,61±2,49 vs 2,24±3,47 mmol). However, vertical jump performance recovery did not significantly increased ($p > 0,05$). Comparing with the control group, only leg power recovery is significantly different, yet the mean of the experimental group mostly greater than control. The conclusion of this current results indicated that curcumin supplementation has potential to accelerate the recovery process due to peripheral fatigue.

Keyword: Curcumin, Peripheral Fatigue, Recovery

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