

**PENGARUH OLAHRAGA PERNAFASAN TERHADAP PERUBAHAN KADAR BETA
ENDORPHIN, INTERLEUKIN-2, INTERLEUKIN-4, INTERLEUKIN-6,
IMUNOGLOBULIN G, dan HORMON KORTISOL
(Sebuah Kajian Immunologi Pada Aktivitas Fisik)**

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The purpose of the research to expressing the changing of immunity at breathing exercise. This research represent of experimental. Device used "randomized pretest-posttest control group design. Population is student M A Mu'Alimin Yogyakarta. sample at every group 15 people. As unit analyse in this research taken away from blood cubiti vena. At this research which specified as variable depended as follows: rate of IL 6, IL 4, IL 2, cortisol, Beta Endorphin, and IgG. Training program conducted during 7 week, 3x /week, submaximal intensity, 6 set/session. This program executed on evening. Inspection laboratory of variable use ELISA method. The data analysis with descriptive statistic and inferensial with computerize SPSS for windows. Then statistical multivariat analysis and discriminant analysis.

The result showed that sample characteristic data after normality test got $p > 0,05$ normal, and homogeneous ($p > 0,05$). Result of the moderator variable (tables 5.2) included in normal span. Dependent variable, after normality test got $p > 0,05$, normal, and lavene's test got $p > 0,05$, homogeneous. Result of manova got $p: 0,000$, its meaning there are difference between group (Wilk Lambda, $p < 0,05$). At discriminant matric structure can be explained the correlation between free variable and discriminant function formed that seen beta endorphin (0.501) its more strong relation with of discriminant function, followed by interleukin 6 (0.367). while other have less meaning. Discriminator variable representing function contribution every discriminator to modulation immunity emerging is beta endorphin, interleukin 6 and interleukin 4. Thereby hence beta endorphin have strongest contribution to increase immunity compared to the other variable.

Conclusion: On the fact result, descriptive research which reported by Suparto, (2001), that breathing exercise can increase physical fitness and impenetrability of proven body manifestly. Breathing exercise increase beta endorphin, immunoglobulin G and Interleukin 6, while interleukin 2 and interleukin 4 do not happened increase. Cortisol nor happened degradation meaning, but at treatment and also control group there are indicate degradation of rate cortisol. Immunity Modulation which cause breathing exercise stressor got by 3 group owning strong contribution on the basis concept of psychoneuroimmunologic. Breathing exercise represent stimuli at path of limbic-hypothalamus-pituitary-adrenal (LHPA) generating immunomodulator process on the basis of physiobiologic paradigm which psychoneuroimmunologic concept.

Keyword: breathing exercise, immunity, modulation

FIK, 2007 (PEND. KEPELATIHAN)