

Thesis Title	The effects of calcium supplementation on cardiac adaptation during exercise
Name	Punnee Nusuetrong
Degree	Master of Science (Physiology)
Thesis Supervisory Committee	Wattana Plakornkul, M.D., M.Sc. Somsong Lekhakula, M.Sc.
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#### ABSTRACT

Calcium is one of the elements with most vital importance in the body. Among ones of the essential functions of calcium is its role on cardiac behavior. In the past, few studies of the effects of calcium supplementation on cardiac efficiency has been observed. Especially, the effects of calcium supplementation on the cardiac adaptation to exercise in normal healthy subject has not yet been reported. This present study, the effects of calcium supplementation on cardiac adaptation to exercise in normal healthy humans were evaluated by non-invasive technique. The systolic time intervals were determined from simultaneous records of phonocardiogram, electrocardiogram and carotid pulse tracing. By determining the changes of systolic time intervals, the changes of cardiac contractility were evaluated. Comparison of cardiac efficiency was made between before and at the end of six-minute cycling ergometer exercise with work load of 73.575 watts per minute in man, and 49.05 watts per minute in woman. Percent changes of various systolic time intervals by exercise were used as control. After ten weeks of 270 milligrams daily calcium supplementation, the

investigations were repeated. By comparing the percent changes of various systolic time intervals from exercise before and after calcium supplementation, there was a definite increase in magnitude of degree of improving contractility of the heart during exercise. Roles of calcium in excitation - contraction coupling and augmentation of the release of catecholamines during exercise seems to be involved in this effect of calcium.

Evidence of higher calcium level responsible for the changing of cardiac behaviour was supported by higher blood calcium level and higher urinary excretion during supplementation period.